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OUTLINES

OF

MEDICAL TREATMENT

INTENDED AS

A COMPANION TO THE STUDENT'S GUIDE

TO

MEDICAL DIAGNOSIS.

BY

SAMUEL FENWICK, M.D.,

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SECOND EDITION.

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PREFACE

TO THE

SECOND EDITION.

THE short time that has elapsed since the publication of the former has not afforded an opportunity for any great changes in the present edition, but numerous corrections have been made wherever they seemed to be required.

I have to thank my son, Dr. Bedford Fenwick, for his supervision of the work whilst passing through the press.

29, HARLEY STREET,
CAVENDISH SQUARE;
June, 1881.

PREFACE.

WHEN recently occupying the Chair of Medicine at the London Hospital Medical College it was my custom to devote the last few lectures of each session to a short outline of the treatment of the various diseases which had been described during the course. I found that by so doing I was the better enabled to aid the thoughtful student in preparing for his examinations, and also that the plan served to call to the minds of the class what had been taught them in the wards of the hospital and in the out-patient clinique. On relinquishing the chair it was suggested to me that the publication of these lectures might perhaps prove useful, and acting on this I have put together the notes from which they were delivered, whilst retaining, as far as possible, the arrangement and conversational style of the original lectures.

Such general rules as are applicable to the treatment of disease in all its forms, and which must, therefore, be ever borne in mind, are briefly laid down in the first chapter, and reference to them is afterwards rendered easy by a lettered arrangement throughout the book.

Believing that similar pathological conditions, although in diverse organs, present similar indications for treatment, I have in the second chapter shortly delineated such indications as present themselves in the acute forms of disease; whilst in the third chapter are described those arising from pathological changes of a chronic nature, and in the chapters that deal with separate diseases the remarks as to their treatment are preceded by a reference to the pages in which these indications are to be found.

On many occasions I have been forcibly reminded of one great advantage of the old apprenticeship system, which has somewhat suffered by the change in medical education of recent years. Formerly, when most students had served an apprenticeship before entering upon their hospital career, each one was practically acquainted with the actions and doses of the drugs in common use, even when ignorant of all beside. Now we meet with many who can well describe the course and symptoms of a disease, but who are entirely unacquainted with the remedies employed in its treatment. I need scarcely remark how needful it is that every senior student should not only know his remedies by heart, but that he ought to be so perfectly familiar with their doses and ordinary combinations that he may be able to write his prescriptions with ease and confidence; and so, with a view of assisting him in this, I have added a number of formulæ, which I would advise him to practise himself in copying. They are simple in character, and are selected from Mr. Squire's valuable collection of the pharmacopœias of the metropolitan hospitals, from the works of Dr. Tanner, Mr. Beasley, and other authors. The arrangement of remedies is that proposed by Dr. Wood.

Notwithstanding that, in all our larger hospitals, the most improved methods for the administration of remedies are in constant use, I have thought that a few hints on this subject might not prove unacceptable to those senior students who have the management of dispensaries and cottage hospitals, and therefore for this purpose a few drawings are inserted.

In conclusion, I must remind my readers that this volume is not intended as a substitute for the more elaborate treatises on medicine. It is only an outline, which must be filled in with the student's own observation and experience. If, however, it should tend to make him more careful and painstaking in the treatment of his cases; if it should make his views more clear as to what he can and what he cannot effect by medicine; if it teach him when actively to interfere, and when to be content with the mere relief of symptoms; the purpose of its publication will have been fully answered.

29, Harley Street,
Cavendish Square;
September 5, 1879.

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CHAPTER I.

ON THE TREATMENT OF DISEASE GENERALLY.

THE treatment of a disease is much more difficult than its diagnosis. In diagnosis you have, for the most part, only to discover what is the state of the organ affected, and by attention to the symptoms and physical signs you may generally arrive at a correct conclusion. But you have to take into consideration the age, sex, condition, and previous state of the health of the patient, and whether other maladies coexist, before you can determine on your line of treatment. Again, diseases vary greatly in severity at different times, and, even in the same disease, what may be useful at one period may be positively injurious at another. You will, therefore, understand that close and accurate observation is essential to the formation of a good practitioner, and that no amount of reading, however valuable this may be, can compensate for a want of clinical experience.

Most students commence their career with very erroneous ideas respecting the aim of therapeutics. They imagine that there are particular drugs that have power over certain diseases, and that it is only necessary to discover the complaint, and then a medicine proper for it may be readily found. They look, in fact, upon drugs as antidotes to the diseases for which they are administered. It is quite true that there are some that prove, in most cases, beneficial in particular diseased conditions of the system, such as mercury in syphilis and quinine in ague. But that these medicines are not antidotes for such complaints is proved by the fact that syphilitic iritis may commence whilst a patient is under salivation, and ague may attack a person exhibiting the symptoms of cinchonism.

Another very general mistake is that the treatment of a complaint consists solely in the administration of drugs. The student looks upon a physician as ignorant or neglectful who does not introduce into his patient's system various vegetable or mineral substances whenever he is called upon to prescribe for him. But, in reality, drugs are only a part of the treatment of disease, and are often inferior in value to rest, position, diet, and such like measures. Nay, sometimes they positively do mischief. Take, for example, a case of acute gastric catarrh. In many cases every drug that is prescribed acts only as an irritant to the inflamed stomach, and the vomiting does not subside until both drugs and food have been abandoned, and the organ has been left in a state of perfect rest.

The ideas of students are often very vague upon another point: they imagine that when a disease has ended in recovery it is in consequence of some remedy that has restored the injured part to its normal condition. The fact is that all cures are the result, not of the drugs administered, but of the reparative power that is inherent in every animal body. Why an injured part should be restored to its former condition we are no more able to explain than we can understand the mysterious processes of growth, secretion, or reproduction. But we know there is a power in every structure that tends to maintain its normal state, and to restore it, when injured, to such a condition as will best enable it again to discharge its functions.

There are some general rules you will do well to bear in mind in the treatment of all diseases. The most important of these is—**A.** *Always make it your first object to ascertain and, if possible, to remove the cause of a disease.*

This rule will prove invaluable to you in practice, and by it you will be often enabled to obviate or cure diseases rebellious to all medicines. For example, a gentleman had suffered for some years from severe attacks of asthmatic bronchitis, for which he had been treated without success by various practitioners. It was, however, observed that the attacks generally occurred once a fortnight, and very often on a particular day of the week. Further inquiry elicited the fact that on the previous day he generally attended a cloth market, the atmosphere of which was loaded with dust. As particles of wool are very irritating to a sensitive bronchial membrane, he was recommended to give up this part of his business, and as soon as this advice was followed the attacks disappeared. The irritating effects, not only of dust, but even of animal exhalations, are often seen in medical practice. Some asthmatics suffer if they come near dogs, horses, or monkeys, and, by bearing this in mind, you may often obviate attacks over which drugs seem to have but slight control. Again, nothing is more common than to meet with a catarrh of the stomach, which the most careful treatment is unable to relieve, because it is kept up by a habit of secret drinking. Here, nothing but inducing your patient to abstain entirely from all kinds of alcoholic stimulants will have the slightest effect; but if you can prevail upon him to do so there will be no necessity for medicines. These are but examples of what you will meet with daily, and your success will greatly depend on the acuteness with which you detect the causes of a malady, and the tact you employ in removing them.

But where you fail to discover a cause for a disease in the habits or occupation of your patient, you may often, especially in chronic cases, hit upon some constitutional ailment that has given rise to the local disorder. Thus, you may obtain a history of syphilis in an obscure disease of the brain, or of gout in a case of chronic dyspepsia. By the exhibition of iodide of potash or of colchicum you may then rapidly relieve symptoms which other medicines have failed to remove. Or you may be able to trace a disease to an affection of some distant organ. For example, convulsions in children often arise from teething or from intestinal worms, and the use of the gum lancet or the administration of an anthelmintic may at once relieve the nervous irritation.

Experience will soon prove to you that a circumstance that in a healthy condition would exert no injurious influence may act most seriously upon an organ when it is diseased. For instance, food that would ordinarily produce no ill effects may excite incessant vomiting if taken into an inflamed stomach, and an amount of light or sound that would be grateful to a healthy person will often act most injuriously upon one suffering from delirium.

You see, then, that it is the first and most important duty of a physician to detect and remove any circumstance that has produced or may be keeping up a disease. In no particular do practitioners more completely differ than in the constancy with which they keep this principle before them. Attention to it often compensates for a lack of scientific knowledge, whilst its neglect will render the most accurate acquaintance with pathological and therapeutical science comparatively useless.

Most acute diseases are the results of some morbific material imported from without, or formed within the animal body. For example, scarlatina is produced by a poison communicated from one person to another, whilst gout is the consequence of an accumulation of urate of soda generated within the system.

In the majority of acute disorders there is a tendency to recovery after a certain time has elapsed, in case there is no failure in the function of any of the organs that are essential to life. Now, the heart is especially necessary for the continuance of existence, and on this fact is founded the second general rule which is applicable to the treatment of all *acute* diseases, viz.:—**B.** *In all acute disorders watch carefully the condition of the heart and circulating system.*

You must have remarked how a careful physician examines the pulse, and often the heart, in every acute disease, at each visit. This is to enable him to ascertain the state of the circulating system, for he knows that any undue excitement or any failure of the heart's power will give rise to serious consequences. In the early stages its force is often greatly increased, and if there be a coexisting contraction of the smaller arteries and capillaries, the tension of the arterial circulation will be augmented, and an embarrassed state of any organ that is especially liable to disease may result. In this case he directs his efforts to moderate the undue excitement. But in the later stages, and sometimes also in the early periods of an acute disorder, he has generally to combat a failure in the power of the heart. This may arise in different ways. The heart, like the other muscles of the body, is often enfeebled from the first by the cause producing the disease, or it may be the result of the increased rapidity of its action. In each revolution of the organ a certain time is allotted to repose, during which its power is recruited; but when its frequency is augmented, the period of rest is, of course, diminished, and, as in the case of all other muscles, the effects of over-work are shown by exhaustion. But from whatever cause the failure may arise, there is no doubt it is your first duty to watch the state of the heart from day to day in every acute disorder, and to employ appropriate treatment at the earliest indication of feebleness.

In the present day some practitioners would object to the statement, that you may ever be called upon to moderate the action of the heart by the employment of energetic treatment. Such persons, I believe, take a limited view of disease, and do not make sufficient allowance for the variations arising from different conditions. Let me show you how the necessity for changing the ordinary practice in different circumstances was impressed upon my own mind.

After a lengthened hospital experience as a student, I had arrived at the conclusion that bloodletting and all other depressing measures, were always injurious in pneumonia, and that we should either allow the disease to run its course, or should support the strength by stimulants. With such impressions I entered upon practice in an agricultural district, and one of the first important cases that came under my care was one of pneumonia. I could not fail to remark that the breathing was more oppressed, the pulse harder, and the general distress greater than I had been accustomed to see. I, however, abstained from all active treatment, and hoped the patient would go on favourably. Day by day the symptoms increased in severity, and in the second week she succumbed to the disorder. Mortified at my want of success, I called upon a medical friend and asked him how he was in the habit of treating pneumonia. "Oh!" replied he, "in the ordinary way, free bleeding, tartar emetic, &c." To all my offers to prove to him that bleeding could never cure any inflammation, he only replied that the practice was successful. Shortly afterwards another case presented itself. Here, again, the symptoms were so urgent I felt that active treatment of some sort was required, but prejudice stood in the way, and the patient was only ordered a saline aperient. At the next visit he was much worse, and in desperation I opened a vein, intending to abstract only a small quantity of blood. It spurted out, however, so freely that a considerable quantity was lost before its flow could be arrested. The patient was at once relieved, and recovered without a bad symptom.

During the whole of my residence in that part of the country I invariably used bleeding in the first stage of pneumonia, and always with relief to the patient. I returned to a manufacturing district, and one of the first cases I was called upon to treat was one of pneumonia. Finding he had not been bled, I used the lancet, but the blood merely trickled from the vein, and he became so faint that it was necessary to stop it. The man sank rapidly, and from that day I have never had occasion to use the lancet in this disorder. Now, you will remark that the same disease required different treatment, because the condition of the vascular system was different. In the countryman, the reaction of the heart set up by the inflammation was intense, the blood was driven with great force through the limited area of the pulmonary capillaries, and, in consequence of the obstruction thus produced, the right side of the heart and the venous system became overloaded. Venesection at once relieved a condition that might otherwise have proved fatal, and gave time for the inflammation to subside and for the powers of nature to repair the mischief. In the latter case the action of the heart was depressed by the inflammation, and stimulants, not venesection, were required to enable it to maintain the circulation until nature could restore the lung to its healthy state. The art of the physician, therefore, consists in *watching* the condition of the organs essential to life during acute disease. He ought not to treat the pneumonia, but the patient who is suffering from pneumonia, and who presents certain abnormal conditions of his system that may call for his interference.

The third rule you will find useful to remember is —C. *In all acute diseases watch carefully the state of the nervous system.*

The nervous and vascular systems are so closely connected that an undue excitement or failure in the one is usually associated with a corresponding condition of the other. Thus, a loss in the regulating power of the nervous centres over the production of the heat of the body generally coincides with an increased rapidity of the pulse. But this is not always the case, for death may be ushered in with symptoms indicating paralysis of the brain rather than that of the heart. In every acute disease, therefore, you watch the state of the nervous system, and are ready either to soothe or stimulate it, as the circumstances of the case seem to require.

The next rule is as important as those just stated.

D. *In all acute diseases insist upon perfect rest.*

The greater portion of the body consists of muscular structure, and excepting in the recumbent position, some part of this is in more or less constant action. At each contraction of a muscular fibre the arteries supplied to it dilate; thus, an augmented quantity of blood is directed through it, and, as a necessary consequence, where the muscular action is to any great extent, the heart is forced to contract more quickly and forcibly to keep up the circulation. Again, we see the effects of muscular action upon the nervous system in a state of health in the production of fatigue, and we may, therefore, be certain that all muscular effort is also associated with expenditure of nervous force. The effect, therefore, of bodily exertion is to excite the vascular and nervous systems, and these we have already seen are more especially apt to suffer injury in all acute maladies. Whenever a muscular fibre contracts sarcolactic and carbonic acids are produced, and in all probability an increase of heat is the result. It is most likely from this cause that the temperature of a patient suffering from fever is often higher on the day of his admission into the hospital than at any subsequent period, and it is probably from the expenditure of nervous force during exertion that many persons sink from exhaustion who have made forced journeys to reach home whilst suffering from acute disorders. You cannot, therefore, too strongly insist upon your patient remaining in bed, not only as long as the temperature is above the normal point, but also until all the symptoms of acute disease have disappeared.

In most acute disorders, and especially in those attended with fever, there is a diminution in the functional powers of the digestive organs. After death we usually discover a catarrhal condition of the mucous membrane of the stomach and intestines, whilst loss of appetite and thirst are prominent symptoms during life. This repugnance to solid food and the great desire for liquids are probably intended by nature as means to limit the duration of acute maladies; the failure of the digestion checking the introduction of new material into the disordered system, whilst the increased supply of water assists in the chemical changes that take place in the affected structures. You will best then fulfil the conditions as regards nutrition by attending to the following rule:—**E.** *In all acute diseases attended by fever the diet of the patient should consist only of liquid food.*

In chronic disorders a much more complex problem is presented to the practitioner than in those that are acute. He has no occasion to watch the heart or the nervous system, unless these organs be specially affected, but has to determine what are the circumstances that prevent the reparative power from restoring to health the injured structures. It is especially in chronic complaints that a knowledge of the causes of disease is of so much value, and the physician is called upon to use all his tact to trace the morbid conditions to their sources. As a general rule, where no removable cause can be discovered, the powers of reparation are obstructed, either by some abnormal condition of cell-growth, such as cancer or tubercle, or by some imperfection in the quantity or quality of the blood supplied to the tissues. It is only in the latter case that our remedies are likely to be of much avail, and therefore the next general rule may be laid down as follows:—

F. *In all chronic diseases you must direct your attention to the organs engaged in nutrition.*

One of the first and most important points to be attended to is the regulation of the diet. In the selection of food you must bear in mind that it is necessary to choose, not only what is nutritious and likely to agree with the digestive canal, but what is appropriate for the complaint you have to treat. Thus, a liberal supply of animal food is essential for the improvement of an anæmic condition, whilst you must diminish the amount in cases of feeble digestion. Where there is a tendency to the formation of sugar it is of the first importance to exclude all materials of a starchy or saccharine character. Again, I need scarcely remind you that oxygen is as necessary to nutrition as food, and you will constantly find change of air and exercise restore a patient to health when drugs have failed to relieve.

In prescribing drugs for chronic disorders there is no more common mistake than to suppose that the use of tonics is all that is necessary. In the greater number of cases some imperfection exists in the functions of the excretory organs, and, at some period or another, you will find it necessary to pay attention to the kidneys, bowels, skin, or liver. Indeed it is always wise to ascertain first how these are acting before you commence with strengthening remedies.

You will observe that I have only said you are to *watch* the condition of the vascular and nervous systems in acute disorders. You must not suppose that it is necessary that you should interfere in every case. If, for example, you are attending a person with measles or pneumonia, and the derangement of the heart and nervous centres is not greater than you might reasonably expect, you would allow the disease to subside without any meddling on your part. But if the heart should begin to fail, or the heat of skin become excessive, you must at once adopt such measures as may stimulate the vascular system or lessen the ill effects of the high temperature on the blood and tissues. In order, therefore, to know when to interfere, you must be acquainted with the course of each disease, with the symptoms that necessarily arise from it, and in what order and for what period they usually present themselves. No amount of reading will teach you the natural history of disease; you can only acquire it by careful and accurate observation.

In every disorder certain secondary diseases or complications are apt to arise. For example, you meet with pneumonia in measles, sore throat and acute inflammation of the kidneys in scarlatina. These complications often require careful attention, when it is not necessary to interfere with the original malady. But it is not uncommon for two or three complications to occur at once in the same patient. Thus, a person affected with kidney disease may have dropsy and erysipelas of the legs, and at the same time may be attacked with pleurisy or pericarditis. Under such circumstances the best rule is to direct your treatment against the affection that seems to be the most dangerous to life and which you are most likely to overcome.

In the use of drugs there are a few points that are especially worthy of notice. Thus, they are always most certain in their action when applied directly to the affected structure. When they have to traverse the circulation in order to reach an inflammation of the skin or mucous membrane they are much less likely to prove efficient than when brought into immediate contact with the nerves and vessels of a diseased part.

Never forget that most medicines require time to enable them to act upon the system. Even our most potent drugs, such as digitalis and mercury, must be given in repeated doses before they can influence the nutrition of a diseased structure. There is no more certain sign of a bad practitioner than the constant changing of his remedies. It shows either that he is doubtful of his diagnosis, or that he is uncertain as to the best means of subduing the disease he has to treat. An anecdote that used to be related by an old teacher of my own has often been of service to me when I have felt impatient from not attaining rapid results. Dr. S. was requested to see a patient along with a young practitioner. When they retired to consult upon the case the physician thus addressed his junior colleague:—"As we seem quite agreed upon the diagnosis, you had better give him some digitalis." "I prescribed it," said the other, "but it did not at all agree with him." "Then have recourse to mercury in combination with it," remarked Dr. S. "I did so," was the reply, "and it made him so ill I was forced to give it up." "Give him some acetate of potash," was the next suggestion, but this had also been ineffectually tried. Much amused, the senior recommended various diuretics, but all had been employed in vain. At last Dr. S. addressed the practitioner in these words:—"Your patient has, I find, been under your care for ten days, and in that time you have employed at least ten powerful drugs, no one of which has succeeded. Now, I only know of one remedy likely to be successful in such a critical case." "I am sure I shall be most grateful to you for any suggestion," replied his colleague, "after so much disappointment." "Well, then, sir," rejoined the physician, "try some *patience*, for I fear that the want of this has been the only cause of your failures." "And that remedy, gentlemen," Dr. S. used to say, "cured the patient."

The only means of preventing that constant change of treatment which is so common amongst young practitioners is for you to take time before you prescribe; make up your mind as to the diagnosis, weigh carefully all the circumstances of the case, and, having once decided upon a line of treatment, follow it out perseveringly.

You may, however, say: "This may be all very well for hospitals, but it would never do in private practice, the desire for a constant change of remedies is not my fault. How can I keep to the same prescription when a patient complains at every visit that it is doing him no good, and when I feel I must either indulge his caprice or be replaced by another practitioner?" Now, I once knew an old surgeon whose drug bill must have been very moderate. He used the lancet freely, and, in bad cases, calomel, opium, or active purgatives. For ordinary cases he kept only two mixtures. One, which he named "Mistura salina," was composed of nitre and water; the other, which he called "Mistura stomachica," contained carbonate of ammonia and infusion of quassia. Either of these he would so ingeniously alter in appearance and taste with saffron, roses, or ginger, that his patients took it for weeks, not only without grumbling, but without any suspicion that no practical alteration had been made in it. Without adopting the very limited pharmacopœia of my old friend, you may take a hint from his practice. You may vary the *non-essentials* of your prescriptions so as to keep the most captious patient in good humour, at the same time that you persevere with any remedy you may think it important to administer. Besides this, there are in every disease various symptoms that of themselves demand attention. An old proverb says, "A good physician should have a plaster for every sore;" and you may, by relieving symptoms, establish a reputation for medical activity that will enable you to persevere with the main object you have in view.

CHAPTER II.

ON THE INDICATIONS FOR THE TREATMENT OF ACUTE LOCAL DISEASES.

THE application of the general rules mentioned in the last chapter requires to be modified according to the nature of the disease and the physiological importance of the organ affected. It will be evident, however, that the same pathological change, whenever it occurs, must be treated on similar principles. Thus, you combat acute inflammation of the peritoneum in the same manner as pleurisy, but the medicines employed, or their doses, may have to be varied according to circumstances. I may here also mention that the principles of treatment in medicine and surgery are the same, both being founded on a knowledge of physiological and pathological laws. Whatever, therefore, you have learned in your surgical studies will aid you in acquiring definite views respecting the management of medical cases.

1. *Indications for the Treatment of Acute Inflammation.*

In all acute inflammations there is first observed, in such animal structures as can be examined by the microscope, a dilatation of the smaller arteries and an increased rapidity of the current of blood through them. The capillaries and smaller veins soon become overloaded with blood-cells, and the quickness of the stream gradually lessens until it is completely arrested. The white corpuscles escape in great numbers through the walls of the capillaries and distend the surrounding structures. If the tissue be an unimportant one and the cause which has produced the morbid condition be withdrawn, the parts gradually resume their normal state. But where the inflamed structure is physiologically important, the local irritation excites the vascular and nervous systems. The contractions of the heart are increased in rapidity and force, the temperature of the whole body is augmented, and other signs of disorder of the nervous centres make their appearance. As, then, in inflammation of any important organ the vascular and nervous systems are affected, both locally and generally, it is necessary for the practitioner to direct his attention mainly to them. Of course where the complaint is not of a serious character he will content himself with merely attempting to relieve such symptoms as may be especially troublesome, but when the general or local disturbance is likely to prove dangerous he is forced promptly to interfere.

A. In every case we should first ascertain, as far as possible, the cause of the inflammation. Where the mucous membranes or the skin are the seat of the malady it is often possible to remove the exciting cause. In bronchitis, for example, the shielding of your patient from cold air or damp, or from the irritation of dust, may suffice to relieve him. In catarrh of the alimentary canal it is always requisite to scrutinise most carefully the quantity and quality of the food. The inflammatory affections of the solid viscera often have their source in an abnormal condition of the blood, such as is produced by rheumatism or gout, and before determining on your line of treatment you must ask yourself whether there is any evidence of these being present. If such prove to be the case, the fact must be borne in mind both in prognosis and in treatment. Still more frequently you discover that there is some imperfection in the eliminating organs. This is the reason why the test tube is so constantly employed in order to detect renal disease in cases of pneumonia, bronchitis and serous inflammations, and why we so carefully examine the liver in all inflammatory affections of the digestive tract. Whenever you find an inflammation arising from a disease of an excreting organ you should direct your treatment to relieve the primary as well as the secondary affection.

But we also meet with a very large class of inflammatory disorders, in which there is from the first a diminished action of the heart and a depressed state of the nervous centres. Such are named by some pathologists "infective inflammations," and they are the result of the absorption of some noxious material. We meet with them, for example, in pyæmia, diphtheria, typhus, smallpox, and other eruptive fevers. In the treatment of these the depressed condition of the general system chiefly requires your attention, as the course and termination of the local malady depend entirely upon the cause from which it has arisen.

B. You have the power of increasing or diminishing the tension of the vascular system, either generally or locally, and the choice of your line of treatment in this particular is usually the chief difficulty you meet with. Formerly, in all cases of inflammation of any important organ, it was the universal custom to bleed. This became so much the recognised method of treatment that most physicians looked upon bloodletting, not as necessary to relieve an abnormal state of the vascular system, but as an antidote for inflammation. I have known an old practitioner, who was puzzled with a case, place his finger on the patient's pulse, and then remark that "the pulse would bear bleeding," as though venesection was the natural escape from his therapeutic difficulties. Of late years medical opinion has set in the opposite direction, and you will meet with many who think they can always overcome inflammation by increasing the power of the heart by means of stimulants. Although this idea is as unscientific as the other, it is certain that patients do not bear the loss of blood in the present day so well as formerly. It has been supposed that there has been a change of type in disease, so that the same pathological change, for example, pneumonia, now occurs along with different conditions than in the days of our forefathers. My own observation leads me to think such is the correct view of the case, and a little consideration will show you this is a practical matter, and not one only of speculative interest. If this change of type be true, it may alter again, and you may at some future time, or in some other place, have to reverse the line of treatment you now adopt. I think there is little doubt that, although venesection will not cure inflammation, it will in many instances relieve a dangerous state of vascular tension either of the venous or arterial system, and by so doing, afford time for the morbid action to subside.

Many practitioners will allow that, if in any inflammation of the chest the right side of the heart and the venous system become overloaded with blood, venesection will prove of use. But as regards the over-tension of the arterial system they regard bleeding as inadmissible. The older writers, however, pointed out a hard state of the pulse as the special indication for bleeding. They taught that, if in a young and vigorous individual a pulse that is not readily compressed coexisted with inflammation of an important organ venesection should be performed. I believe they were quite correct, but in the present day it is exceedingly rare to meet with this hard pulse, and consequently bleeding, on their own principle, is seldom required. You must not, however, confound the pulse of old age with the hard pulse. The former is hard, not from undue tension of the circulation, but because its coats are rigid. You can easily distinguish it by first emptying the vessel by the pressure of the finger, and feeling it while thus compressed.

There are other methods of depleting the circulation in inflammation besides bleeding. By purgatives, more especially those of the saline class, you can drain away a portion of the more fluid part of the blood, without depressing the action of the heart too severely. In most cases you will find purgatives of value, for, in addition to the depletion, they remove any source of irritation that may be present in the intestinal canal.

In some instances it is advantageous to reduce the heart's action by tartar emetic. This powerful remedy is most efficacious in pneumonia and bronchitis, but it may be used whenever you think it desirable to depress the circulation. Aconite and the veratrum viride are also employed for the same purpose, but they are not so generally useful as antimony.

It will be unnecessary for me to remind you that whenever you find it necessary to lessen the action of the heart all stimulating food should be forbidden. The patient may be allowed to drink freely of water, toast water, or barley water; he may take milk, farinaceous food, and in some cases beef tea or animal broths, but alcohol in all forms, as well as solid food, must be forbidden.

The blood-vessels of an inflamed part are frequently overloaded, whilst the state of the general circulation calls for no interference. The pulse is soft, although the local symptoms are severe. Here you can often relieve by leeches or cupping, when the use of the lancet would be detrimental. This is more especially the case where the serous membranes are affected. You will often see large doses of opium incapable of giving relief, when, after the application of leeches, a much smaller quantity will afford almost immediate ease.

But whether you employ local bloodletting or not, you can generally alleviate the symptoms of acute inflammation by cold or hot applications. The former may be employed in the shape of ice, or as cold or evaporating lotions; the latter as poultices or fomentations. There is often great difficulty in saying whether hot or cold applications will be most useful, and we are advised to be chiefly guided by the sensations of the patient. As a general rule, cold is most beneficial when there is much heat of skin and the inflamed part is external, hot applications when the internal organs are affected, or there is a tendency to suppuration.

You should bear in mind that defective nutrition alone is able to induce inflammation, and that in the present day this is one of the chief sources from which it arises. In "infective inflammations" the local affections run a most rapid course, although attended with a feeble condition of the circulation. Here, of course, you are called upon to stimulate, not to depress the heart, to augment, not to lower arterial tension. You, therefore, trust to alcohol, ammonia, ether, and other stimulants. It was in this class of cases that cinchona achieved so great a reputation, and it is still in them that we now prescribe quinine so largely. Of course, the diet must correspond to the character of the drugs prescribed. You support the failing strength of the patient with strong beef tea, soup, milk, eggs, jellies, &c., in small quantities and at frequent intervals. Locally, all cold applications must be forbidden, and hot poultices or stimulating lotions alone allowed.

C. In every case of acute inflammation affecting an important organ it is necessary to soothe undue irritation of the nervous centres, to relieve pain, or to reduce fever. Of late years, since the hard pulse formerly described as being commonly present in inflammatory conditions has been less frequent, attention has been directed to the nervous rather than to the vascular system. Consequently the administration of opium has replaced, to a great extent, general and local bloodletting. You must, however, bear in mind that the routine system of prescribing sedatives in every case of inflammation is as unscientific and as likely to end in failure as the former plan of venesection. By the use of sedatives we relieve pain, and thus place the affected part in a better condition for recovery. But in many cases we do more than this,—we give rest to the structures. When a joint is inflamed the surgeon seeks by mechanical means to ensure repose. When a serous membrane, which is similar in structure to the lining of a joint, is inflamed, we apply the same principle in its treatment. For example, although we cannot mechanically restrain the motion of the abdominal organs in a case of peritonitis, yet, by the free administration of opium we can so limit the motions of the parts covered by the peritoneum that we produce a state of comparative rest. Where opium is contraindicated, you may use some other sedative, such as belladonna, conium, or hyoscyamus, as a substitute.

Pain in inflamed structures is relieved by the same measures you employ to lessen vascular engorgement, but where the suffering is intense you must use sedatives locally. You may add opium, belladonna, chloroform, aconite, or some other remedy of this class, to the fomentations or poultices. In other cases you inject morphia subcutaneously, or apply it upon a blistered surface.

D. The necessity of rest in all acute diseases has been already pointed out, and it is especially requisite in inflammation. In directing the position of your patient you must select that which will facilitate the return of the venous blood from the affected structure. In surgical practice you must have constantly noticed the beneficial results of attention to this point. A man enters the ward with an inflamed leg, the veins being distended with blood. You raise the limb above the level of the body, and in a short time it becomes less red and swollen, and the pain is alleviated. In medical cases, of course, you vary your position according to the part that is affected. Thus, in cerebral inflammation the head is raised, so as to facilitate the return of the venous blood; in pulmonary disorders you adopt a similar posture, in order that the breathing may be carried on as easily as possible; whilst in abdominal diseases you keep the patient in the recumbent position.

But it is still more important to place every inflamed structure, as far as possible, in a state of rest as regards its function. Students constantly neglect this point, and think they have done sufficient when they have ordered their patients to bed. If an artificial opening be made in the stomach of any of the lower animals the mucous membrane appears pale and bloodless if the inspection is conducted whilst the animal is fasting. But as soon as food is placed in the organ the arteries enlarge and pulsate, the surface becomes everywhere injected, and secretion commences. This increased determination of blood to a part in a state of functional activity tends, of course, to increase the vascular engorgement whenever inflammation is present, and may light up a diseased action which is subsiding. A woman was under my care with an inflamed gastric ulcer, which produced great pain and constant vomiting. She was confined to bed, and restricted to milk and farinaceous food, and quickly began to improve; the pain diminished, vomiting ceased, and we hoped she would soon be well. But her appetite returned, and she clamoured for solid food. A newly-appointed house physician took upon himself to order a chop, in compliance with her entreaties. The very next day she was attacked by violent hemorrhage, from which she nearly perished, and from that time the former signs of improvement vanished, and she left the hospital no better than when she entered it. It is often a point of great difficulty to determine when the inflammation of an organ has so far subsided that you may permit it to resume its functions. As a general rule, it is the safest plan to do this gradually, watching the effects of the change, and regulating the treatment according to its results.

E. This rule requires no modification in inflammation. You must judge as to the necessity of relaxing it by reference to the amount of fever, and the physiological importance of the affected organ.

G. In all inflammations there is an augmented exudation of the liquor sanguinis from the blood-vessels. But, in addition to this, there is an increased activity in the cells of the inflamed structures. This may result either from the large number of white cells which have migrated from the congested vessels, or from the affected tissues being stimulated by the disease. Now, the exudation may, by the irritation it produces, keep up inflammatory action, or it may obstruct the recovery of the inflamed organ mechanically. In either case you may have to interfere, so as to permit the reparative power to come into play. For example, a case of pleurisy may have terminated (as far as the inflammation is concerned), but the exudation may be still compressing the lung and preventing the recovery of its functions. Here the use of the aspirator removes the load from the organ, and allows the due expansion of the pulmonary structures.

Formerly it was universally believed that mercury exercised a specific effect on the inflammatory process, and had the power of preventing or absorbing exudations. The student was taught, in every case of inflammation, to prescribe this drug and to persevere with it until salivation showed that the system was saturated with it. At the present day it is seldom employed, and its power of checking inflammation is doubted. I have, however, seen mercurial treatment of decided benefit where repeated attacks of subacute inflammation have occurred in the same structure, more especially in the case of the serous membranes.

In the removal of inflammatory exudations you must vary your methods of procedure according to the structure affected. If the exudation is liquid, as in the case of the serous membranes, you may often assist absorption by lessening the amount of fluid in the vascular system, by means of hydragogue cathartics, diuretics, or sudorifics. Where the mucous membranes are affected you may have to alter the state of the secretions, or to assist in their expulsion, by stimulating the muscular structures that surround them. Again, you may often remove exudations of a solid character by the use of blisters, or the application of iodine or other irritating substances.

We may, then, sum up the indications for treatment in *acute* inflammation as follows:

A. *Ascertain and, if possible, remove the cause.*

B. *Watch carefully the condition of the heart and circulating system.*

a. The tension of the whole vascular system may have to be lessened.

b. The local congestion may have to be diminished.

c. The action of the heart may have to be increased.

d. The inflamed part may require to be stimulated.

C. *Watch carefully the condition of the nervous system.*

a. It may be necessary to act on the nervous system generally.

b. It may be necessary to act on the nerves of the part affected.

D. *In all acute inflammation insist upon rest.*

a. General rest.

b. Functional rest of the affected organ.

E. *In all acute inflammations the diet should consist of liquid food.*

G. *It may be necessary to remove inflammatory exudations.*

a. By mechanical measures.

b. By medicines.

2. *Indications for the Treatment of Hemorrhage.*

Hemorrhage may occur from the laying open of an artery or vein by accident or ulceration, from a congested state of the circulation of an organ, or from some alteration in the physical or chemical condition of the blood that permits it to escape through the walls of the vessels.

A. It is necessary to discover the source of the bleeding, and this often requires considerable care and trouble. I once saw a young woman who had been ineffectually bled from the arm, leeched, and blistered, on account of a spitting of blood supposed to arise from the lungs. The most careful examination of the chest failed to detect any pulmonary disease, but on opening the mouth the cause was at once apparent. A fungoid projection of the gum was seen arising from a decayed tooth, and the forceps at once relieved her of the bleeding that the active treatment she had undergone had only tended to increase. Where the hemorrhage results from congestion of any organ produced by a disease of the heart or liver, the treatment must be directed to relieve the obstructed circulation. An altered condition of the blood, on the contrary, requires mineral or vegetable astringents to counteract its tendency to transude through the vascular walls. Whenever it is possible you should trust rather to local than general astringents, as they lose much of their efficiency when they have to traverse the circulation before reaching the affected structure.

B. It used to be the custom to bleed in all severe hemorrhages, on the idea that coagulation of the blood at the injured part would be favoured by it. This is now seldom practised, because a slight hemorrhage does not require it, whilst a severe loss of blood of itself sufficiently depresses the action of the heart. In certain cases, as in some hepatic disorders, it may be necessary to deplete the vascular system by saline aperients, but the same objection exists against their use as in some cases of acute inflammation, viz. that their action disturbs the bodily rest which it is so necessary to enforce.

As a general rule, your treatment must be directed to the part from which the bleeding takes place, and you should seek either to constrict the walls of the vessels or to favour the coagulation of the blood. The use of ice is one of the most powerful means at your disposal. A bladder or india-rubber bag filled with fragments of it should be placed over the affected organ, and the ice renewed as often as is necessary. Tannic acid or perchloride of iron may be used locally where the bleeding part can be reached, or acetate of lead, gallic acid, dilute mineral acids, or alum, may be given internally when the hemorrhage is beyond the direct application of styptics. Plugging is the most efficacious method of treatment when the bleeding is from the nostril or other cavity admitting of its application. Of late years ergot has been very generally employed to contract bleeding vessels, and may be administered either internally or subcutaneously.

In the majority of cases it is necessary to stimulate rather than depress the circulation. For this purpose you may employ alcohol, ammonia, or ether. At the present day both the public and the profession are apt to have recourse to stimulants very unnecessarily. You should remember that the faintness produced by the hemorrhage often answers a good purpose, by promoting the coagulation of the blood in the vicinity of the injured vessel.

C. You will rarely find it necessary to have recourse to sedatives, as the loss of blood has itself a depressing effect on the nervous centres. When there is much palpitation you may require the aid of digitalis, henbane, or hydrocyanic acid, to soothe the excitement of the heart, but this seldom occurs except in severe cases. Where bleeding takes place from the digestive tract, opium is of use in restraining the action of the muscular coat, and thus preventing any clot that may have been formed around the vessel from being dislodged from its position.

D. Rest is of the utmost importance in every case; often all that is required is thus to quiet the heart's action and so enable the circulation of the injured part to regain its normal condition. Functional repose is as necessary as muscular rest. If, for example, the bleeding be from the lungs, insist that your patient abstains from talking, as well as from all change of position. If from the stomach, all food must be withheld for many hours after the bleeding has ceased. When the intestines are the seat of the mischief, their action, as I have said before, must be prevented, and perfect rest given to their muscular coat.

E. The same care should be taken as regards diet, as though fever were present. Severe hemorrhage checks the gastric functions, and the diet should be, on this account, as digestible as possible. During the attack the food should be cold. The best means of relieving the thirst that so generally follows severe bleeding is to administer, from time to time, small pieces of ice, which the patient should suck. By lowering the temperature this is often of itself effectual in putting a stop to the loss of blood.

We may sum up the indications for the treatment of hemorrhage as follows:

A. *Ascertain, if possible, the cause and the source of the bleeding.*

B. *Direct attention to the state of the heart and vascular system.*

a. You may act on the vascular system generally by means of astringents.

b. You may apply astringents locally whenever the source of the bleeding can be reached by them.

c. The action of the heart may have to be increased.

C. *Watch the condition of the nervous system.*
a. *Sedatives are occasionally required.*

D. *In all hemorrhages insist on rest.*
a. *General rest.*
b. *Functional rest of the affected organ.*

E. *Food should be in a liquid form, and be given cold.*

3. *Indications for Treatment during an Attack of Spasm or Neuralgia.*

Spasm or neuralgia may arise from any severe irritation affecting the nervous centres when these are in a healthy state, or a very slight irritation may produce them when the brain and spinal cord are unusually susceptible to impressions. The indications for treatment during an attack are different from those required to prevent its recurrence. At present we have only to consider the indications for treatment whilst the patient is suffering from spasm or neuralgia.

A. Spasmodic affections of the internal muscular organs mostly arise from some irritation of their mucous membranes. For example, spasm of the biliary ducts and of the ureters are usually due to the passage of calculi or of unhealthy secretions. But in other cases you require to search for the causes producing them at a distance from the affected structure. Thus, asthma, which consists in spasmodic action of the bronchial tubes, may arise, not only from the inhalation of air loaded with damp or smoke, but may result from an undigested meal, or from an accumulation of lithic acid in the system.

Of late years it has been the custom to look upon neuralgia as an idiopathic disease of the nerves. That such is the case occasionally there is no doubt, but in the majority of instances the pain in the nerve is the result of some irritation near to, or at a distance from, the seat of the suffering. It is a useful rule always to trace back the affected nerve to its root, and if in this way you can meet with no apparent cause for the pain, you should carefully examine all the other organs supplied by branches of the same nerve. Nothing is more damaging to the reputation of a practitioner than the discovery that what has been treated as neuralgia of the head is due to irritation of the gums or teeth, or that a node on the rib is the source of a supposed affection of an intercostal nerve, or that an aortic aneurism or disease of the spine has been overlooked, whilst attention had been exclusively devoted to the nerves irritated by these diseases.

B. It is seldom requisite to pay much attention to the vascular system, unless the heart itself be the seat of the malady. Of course, if there be any sign of failure in power, from the long continuance of a spasmodic attack, you should adopt appropriate treatment, but this is not often necessary.

C. In all cases our main reliance must be placed upon sedatives in some form or another. Where the suffering is severe, and at the same time you wish to relieve spasm, you may employ inhalations, such as those of chloroform or ether. Under special circumstances you may substitute for these nitrite of amyl. Where there is a tendency to general convulsions a different form of sedative is required, and bromide of potash or chloral best meets the indication. The use of the warm bath is invaluable in soothing the nervous system, at the same time that it relaxes the tissues. The most important means of giving relief in neuralgia is the subcutaneous employment of sedatives, and morphia is far above all others in value.

Even where you employ sedatives generally you may often give relief by their local use. Liniments and fomentations and the use of morphia on a blistered surface are in many cases of great service.

In some instances, when sedatives fail, the use of galvanism proves efficacious. Again, you may often relieve neuralgia by applying the sedative, not to the affected part, but to some other organ supplied by the same nerves. Thus, opiate suppositories often prove useful in inflammation of the bladder, and morphia applied to the ear not unfrequently relieves toothache.

D. In all severe cases the patient seeks to give rest to the painful part, because he finds that exertion increases his sufferings. Place him, therefore, in such a position that the affected organ will be able to act most freely and easily. Although functional repose is usually necessary, it is not so essential as in cases of inflammation.

E. It is usually advantageous to keep the patient on liquid food, but this is not so necessary as in inflammatory affections.

We may, then, sum up the indications for the treatment of spasm and neuralgia as follows:

A. *Ascertain and, if possible, remove the cause.*

C. *Watch carefully the condition of the nervous system.*

a. It may be necessary to act on the nervous system generally.

b. It is usually requisite to act locally on the affected part.

D. *During an attack of spasm or neuralgia insist upon rest.*

a. General rest.

b. Functional rest of the affected organ.

CHAPTER III.

ON THE INDICATIONS FOR THE TREATMENT OF CHRONIC LOCAL DISEASES.

WHILST in acute inflammation there is a tendency to recovery, if life can be sustained sufficiently long to permit the disturbance of nutrition to subside, this is by no means so invariably the case in chronic inflammation. The structure may have been so injured that its restoration to a normal state may be impossible, and in other instances the vitality may be so depressed that its repair may be slow and imperfect.

1. *Indications for the Treatment of Chronic Inflammation.*

A. In many cases there is some circumstance that is obstructing the action of the reparative powers. When the mucous membranes are affected you must carefully investigate the habits of the patient. In every obstinate case you should search for evidence of a constitutional disorder; thus, syphilis, gout, rheumatism, ague, and scurvy, are potent causes of local diseases of a chronic form, and, if undetected, they may produce complete destruction of the parts invaded, whilst in the early stages the most threatening symptoms generally yield to appropriate treatment.

When you can find no constitutional cause, always make yourself certain that there is no obstruction to the free return of blood from the affected part. Thus, you should examine the state of the heart in every case of chronic bronchitis, and the liver in all long-standing affections of the abdominal viscera. The application of this rule is very extensive; you will see, for instance, uterine catarrh kept up by an overloaded colon, and chronic affections of the kidneys result from conditions that tend to congest the renal veins. Your surgical practice will have taught you that a varicose state of the veins of the leg may so interfere with nutrition that chronic inflammation and ulceration. are produced, and you can, therefore, readily understand how venous obstruction can prevent repair when the more complicated circulation of glandular organs is in fault.

F. Of equal importance with a free return of the venous blood is a due supply of healthy arterial blood to any organ that is in a state of chronic inflammation. Of course, the due regulation of the diet and attention to the digestive organs are of primary necessity. In most cases it is requisite to improve the general health by means of tonics. You should also search for any circumstance that may be impairing the condition of the blood; thus amongst the poorer classes you daily meet with chronic inflammation of various organs kept up by a failure of nutrition arising from leucorrhœa, prolonged suckling, or excessive menstrual discharge, and unless these are checked all your remedies will fail to secure a normal state of the blood. I need scarcely point out that the condition of the excretory organs has, in every obstinate case, to be carefully investigated, and one of the earliest lessons the student has to learn is the dependence of chronic inflammation upon an imperfect action of the kidneys or liver.

G. The presence of inflammatory exudations is a common cause of irritation. Thus, there may be a large amount of pus in the liver, and until it is removed by surgical operation the reparative power cannot come into play. Or, in other instances, you may have to stimulate the absorption of serous fluid by the application of blisters or other irritants. Where pressure can be applied, as in thickening around the joints, you have a most valuable means of hastening the absorption of exudations.

In many cases of chronic inflammation, as, for example, when a mucous membrane is implicated, the structure of the part may have been so altered that it is incapable of restoration to its normal condition. Under such circumstances you may give relief by assisting the expulsion of the secretions. Where these are tenacious you may make them more liquid, or you may stimulate the muscular coat to increased action. In other cases the secretions may be excessive in quantity, and it will be then necessary for you to employ astringent remedies.

H. *In chronic inflammation it is often necessary to stimulate or depress the circulation or the functions of the affected organ.*

The blood-vessels of a part when weakened by long standing inflammation frequently lose their tone, and are incapable of contracting on their contents. The circulation becomes so languid that the supply of blood is insufficient to enable the process of repair to take place. Hence you are called upon to assist the contraction of the vessels by the application of stimulants or astringents.

It is often necessary to stimulate the functional power of a part on account of its importance to the continuance of life. In chronic inflammation of the kidneys, for example, you may have to give diuretics, in the hope of eliminating effete materials that may have accumulated in the system. On the other hand, it is frequently advisable to lessen the functional activity of the inflamed structures. You meet with this in chronic ulcerations of the stomach and intestines, where rest is essential to enable the sores to heal.

We may sum up the indications for the treatment of chronic inflammation as follows:

A. *Ascertain and, if possible, remove the cause.*

F. *Direct your attention to the organs engaged in nutrition.*

a. Diet of the patient.
b. State of the digestive organs.
c. State of the eliminating organs.

G. *It may be necessary to remove exudations.*

H. *It may be necessary to stimulate or depress the circulation or functions of the affected organ.*

2. *Indications for the Treatment of Dropsy.*

Under normal conditions a certain amount of the liquid part of the blood is constantly exuding through the vessels, and what is not required for the purpose of nutrition is returned by the veins and lymphatics into the circulation. But if from any cause the balance between exudation and absorption is destroyed the tissues become overloaded with fluid, and dropsy is the result.

A. The most obvious cause of dropsy is some obstruction to the venous circulation, that, by increasing the pressure in the interior of the vessels, augments exudation and prevents absorption; consequently, diseases of the heart and liver are the most common morbid states that produce it, and the measures required to relieve them are those best fitted to remove the superfluous fluid. You meet with dropsy also as a result of disease of the kidneys. Here a diminution in the amount of the fluid excreted is associated with an accumulation of substances, which, like urea, readily pass through animal membranes. The vessels, are therefore, overloaded with fluid, and their contents are more apt than healthy blood to transude through them. In other cases the blood is alone in fault, and is so altered in its composition that it readily passes through the vascular walls. The first point, therefore, is to relieve the condition producing the dropsy; and even where we are unable thus to remove the effused fluid the treatment appropriate for the organ primarily in fault must nevertheless be borne in mind.

F. As blood deprived of its due proportion of albumen has a tendency to exude through the vessels it is evident that a properly selected and nutritious diet is of great importance in all cases. Alcohol is often necessary, not only to assist digestion, but also to guard against a failure of the heart arising from an undue action of any of the eliminating organs. In scurvy a proper supply of vegetable food is, of itself, usually sufficient to remove the dropsy, along with the other symptoms of the disorder.

It is especially necessary to attend to the digestive organs where the dropsy arises from diseased heart or liver, for the coexisting congestion of the portal system diminishes the secretion of the gastric juice, and also lessens the absorbing power of the intestines. Tonics are usually required in every case at some period of its course.

One of the most important indications for treatment is to stimulate the organs that ordinarily excrete fluid from the system. By such means we seek to deplete the vascular system on the well-known physiological principle that absorption is promoted by lessening the amount of the contents of the blood-vessels. As a general rule, the kidneys most readily free the body from any superabundance of water, and also do it with the least exhaustion. In order to produce an increased activity of these organs you must have recourse to agents that operate on the general circulation. But as in many cases the kidneys are in an unhealthy state, you may attempt to deplete by stimulating the skin or the intestinal canal. It is often very difficult to obtain a sufficient elimination of fluid from the skin, and the measures required for this purpose are not unfrequently troublesome and inconvenient. A free action of the bowels is more readily set up, but it is apt to exhaust a person already enfeebled by chronic disease, and the frequent movements of the body it necessitates interfere with rest, when this is for other reasons desirable.

We may sum up, then, the indications for the treatment of dropsies as follows :—

A. *Ascertain and, if possible, remove the cause of the dropsy.*

F. *You must direct your attention to the organs engaged in nutrition.*

a. Attention to diet.

b. Attention to the digestive organs.

c. Attention to the eliminating organs.

3. *Indications for the treatment of Dilated Organs.*

A. Up to a certain extent, a muscle contracts with increased force in proportion to the load it has to raise, but when it is excessively, or too long overweighted, its power of contraction is diminished or entirely lost. Consequently, although the hollow muscular organs are capable of sustaining any sudden and ordinary strain, they gradually yield and become dilated when they are long prevented from completely expelling their contents. The cause producing the dilatation is often beyond our power to remove. For example, dilatation of the heart commonly results from diseased valves, and dilatation of the stomach from thickening of the pylorus; neither of which conditions we can alter by medicines. But to prevent a dilatation from increasing, we must reduce, as far as possible, the quantity of the materials that pass through the affected organ, and which, by their bulk, keep the muscular fibres unduly stretched. Thus, in the case of the heart we limit the amount of fluid in the vascular system by bleeding, diuretics, or purgatives; in dilated colon we attempt to remove any accumulation by enemata or aperients. By so doing we allow the muscular fibres to contract, and thus place them in the most favorable condition to recover or to retain their tone.

F. When a muscle is incompletely supplied with blood its irritability is lessened, and it is, therefore, easy to see how important it is to maintain the general nutrition. This is more especially necessary in those instances in which, as sometimes happens, the dilatation has arisen, not from an obstruction to the egress of the contents, but from mere feebleness in the muscular fibres of the organ. These are the most favorable cases for treatment; they require a long-continued and careful course of tonics, such as iron, zinc, quinine, or other vegetable or mineral remedies of this class. It is well known that a due supply of oxygen is essential to muscular contraction, and the lack of strength exhibited by anæmic persons affords an illustration of this physiological truth. It is probably by increasing the numbers of the red blood globules, and thereby assisting oxygenisation, that iron is so especially valuable in dilatation of the heart and other muscular organs. Where there is no anæmia you may have recourse to salts of zinc or silver, or to some of the vegetable tonics.

H. It is evident that it cannot be sufficient merely to diminish the contents of a dilated organ, and to improve the state of the blood circulating through it, for the enfeebled fibres would still allow of a fresh accumulation before we had time to improve their nutrition by tonics. In every case, therefore, after having lessened or removed the contents, you should keep the organ as empty as possible by stimulating its fibres to contraction. It is for this purpose you employ digitalis in heart disease—aloes and other aperients in a case of dilated colon. It is a common and very useful plan to combine the muscular stimulant with the tonic; thus, perchloride of iron and digitalis form a favourite prescription for dilated heart, and sulphate of iron and aloes for a similar affection of the large intestine. As soon as you see the contractile power is improving you may lessen the amount of the stimulant, whilst you continue or increase that of the tonic.

It is also useful to vary the tonic from time to time, so as to keep up the nutrition of the muscle, at the same time that you obviate any disorder of the digestive organs likely to arise from a too long continuance of the same drug.

We may sum up the indications for the treatment of a dilated organ as follows:

A. *Ascertain and, if possible, remove the cause.*

F. *You must direct your attention to the organs engaged in nutrition.*

a. Attention to diet.
b. Attention to the digestive organs.
c. Attention to the eliminating organs.

H. *It may be necessary to stimulate the muscular coat of the affected organ.*

4. *Indications for the Prevention of Spasm and Neuralgia.*

A. In order to prevent the occurrence of spasm every circumstance likely to provoke irritation must be removed. Thus, in colic constipation should be prevented, and the greatest care taken as regards diet and the use of appropriate aperients. In false croup attention must be directed to the state of the gums and digestive canal. In general convulsions you should search for some source of irritation in the various organs, as the complaint often arises from distant and unsuspected causes. Whenever you have reason to suspect the patient has suffered from syphilis it is useful to prescribe iodide of potash, or some other drug believed to possess a specific power over that disease.

In the prevention of neuralgia never neglect to seek for a source of irritation. The search, however, often requires to be both careful and minute. If a history of a former attack of ague or of gout can be discovered, you may often with great success employ the remedies required for these diseases.

F. The state of the nutritive organs is as important in the treatment of spasmodic as in that of any other chronic disease. In the prevention of neuralgia this point is one of especial value, for an anæmic condition is one of the chief predisposing causes of painful affections of the nerves. You ordinarily have to trust to tonics, alcohol, and a liberal diet. Preparations of iron, to increase the proportion of the blood globules, are regarded by many as the most valuable means for the prevention of this class of disorders.

H. *It is often necessary to stimulate or depress the circulation or functions of the nervous centres.*

It is probable that in a healthy state the brain inhibits, or, at any rate, controls, the reflex actions. If this organ is removed in a frog the susceptibility to them is greatly increased, and daily experience shows us that where cerebral exhaustion is present the nervous system is more excitable than in health. It is, therefore, of great importance to attend to the nutrition of the nervous centres wherever there is a tendency to attacks of motor or sensory disturbance. For this purpose you may prescribe phosphorus, which is a constituent of nervous matter, and which may be administered in the pure state, or in some of its compound forms. It acts most beneficially when given in combination with cod-liver oil. In other cases preparations of zinc or arsenic prove very beneficial. Where a direct stimulant is required nux vomica is most suitable.

In certain cases, such as epilepsy, the continued exhibition of sedatives, such as the bromide of potash or belladonna, appears to ward off attacks of convulsions more certainly than tonic remedies.

We may sum up the indications for the prevention of spasm or neuralgia as follows:

A. *Ascertain and, if possible, remove the cause.*

F. *You must direct your attention to the organs engaged in nutrition.*

a. Attention to diet.
b. Attention to the digestive organs.
c. Attention to the eliminating organs.

H. *It may be necessary to stimulate or depress the circulation or functions of the nervous centres.*

CHAPTER IV.

DISEASES OF THE HEART AND PERICARDIUM.

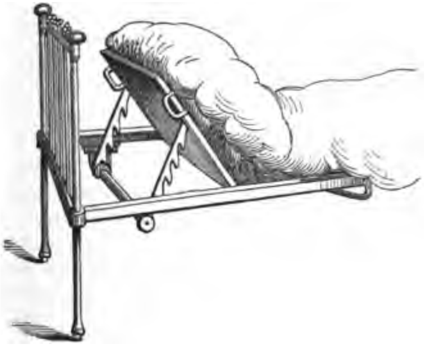
YOU can increase or diminish the rapidity and the force of the heart's contractions, and thereby vary the condition of the circulation throughout the whole body.

The force with which a healthy heart contracts is, other things being equal, in proportion to the obstacle it has to overcome. By muscular exercise the rapidity of the circulation is increased, and consequently the action of the left ventricle is augmented. Whenever, therefore, you wish to diminish its force, you must insist upon perfect rest being given to the whole body. As the right ventricle has to propel the blood through the lungs, and any difficulty in breathing retards the pulmonary circulation, the patient must be placed in such a position as will render the respiration most easy.

When the heart shows signs of failure in a disease unconnected with lung complication the patient should be encouraged to rest with his head low, in order that the brain may be supplied with blood with as little cardiac exertion as possible. But where there is coexisting disease in the lungs the head should be raised. In most hospitals beds are provided, one end of which can be elevated to a convenient height, as seen in the accompanying figure (Fig. 1). When these cannot be obtained a bed chair must be used, or a temporary support may be made by placing an ordinary chair upside down at the head of the bed, and padding its hollow with pillows. The patient is apt to slide down when he is only propped up by pillows without a solid support behind them.

You can stimulate or depress the heart by means of medicines. The chief stimulants are ammonia, ether, alcohol, and digitalis. The first three are rapidly eliminated from the system, and must be, therefore, administered in frequently repeated doses. Digitalis is regarded by many as a tonic rather than a stimulant.

FIG. 1.



Ammonia is most useful when it is necessary quickly to arouse the heart to more vigorous contraction, as in cases of fainting from loss of blood or other causes. When you require an expectorant along with a stimulant, as in the bronchitis of old and feeble persons, the carbonate of ammonia is especially valuable. Where the failure of the heart is gradual, as in febrile diseases, ammonia is greatly inferior to alcohol.

Ether is employed, when, in addition to its stimulant properties, you require an expectorant or antispasmodic.

Alcohol is the most valuable cardiac stimulant we possess. It may be used in all febrile and exhausting diseases as soon as the signs of failure of the heart present themselves, and it should be given at an early period of acute disorders to the old and feeble. Its stimulant effects on the digestive organs especially fit it for any case where there is feebleness of the gastric functions. You must, however, bear in mind how generally it is used to excess by the poorer classes, and how liable the recommendation of the physician is to be quoted as a sanction for its abuse. Wine is the best form in which you can prescribe alcohol, and it ought to be given along with food. Malt liquors are preferred in cases of anæmia, for example, in females whose vascular system has been depleted by long-continued nursing, by leucorrhœa, or menorrhagia. Spirits are employed when it is desired quickly to arouse the heart's power, or where wine is unsuitable. The doses of alcoholic stimulants should be regulated, not only by the necessity for their use, but also by the previous habits of the patients.

Digitalis lessens the rapidity of the heart's action, at the same time that it strengthens the ventricular contractions. It is, therefore, of most use in dilated heart, when the pulse is rapid and irregular. As it is also a diuretic, it is especially fitted for cases where the amount of urine is diminished. It is, however, slow in its action, and as it does not, like alcohol, stimulate the nervous system, it is of comparatively little value in febrile and exhausting diseases. If it produce vomiting, or if the pulse become very slow, it should be suspended until these symptoms have passed away.

The chief depressors of the heart are bloodletting, purgatives, antimony, hydrocyanic acid, aconite, and veratrum viride. Formerly this class of remedies was as generally employed in all acute disorders as stimulants now are. Bloodletting is the most prompt and efficient depressor of the heart we possess. It is now rarely employed for this purpose, excepting in certain forms of congestion and inflammation.

Tartrate of antimony is still a favourite remedy with many practitioners. It is most useful in the acute forms of bronchitis. In small doses it acts as a diaphoretic. In children's diseases it must be used with caution, and ought not to be given when there is any tendency to inflammation of the mucous membrane of the gastro-intestinal tract.

Hydrocyanic acid is rarely used excepting in cases of hypertrophy of the heart attended with distressing palpitation.

Aconite is a favourite remedy with many practitioners to reduce the force and rapidity of the heart's action. It must be used with caution in the old and feeble, and should not be employed when the heart is dilated or otherwise feeble.

The veratrum viride has been much prescribed in America, where it is preferred to aconite, as being more effectual and less apt to induce dangerous depression.

SECTION I.

MORBID STATES NOT NECESSARILY DEPENDENT ON ORGANIC DISEASE.

The action of the heart may be altered in various ways without organic disease being necessarily present, or the same alteration may occur along with very different anatomical changes. Thus, the force with which it contracts may be increased or diminished, its rhythm may be perverted, or it may be the seat of neuralgia.

The contractile power is increased in hypertrophy, but, as you will shortly see, this condition is usually only in proportion to the altered state of the blood-vessels or valves which most generally produces it.

PALPITATION.

The most distressing increase in the action of the heart occurs during an attack of what is termed palpitation. This may take place when the organ is in a healthy or diseased condition. In the latter case it is most apt to occur when the patient has been subjected to physical or mental excitement. In the former it often comes on suddenly, and without any apparent cause. An attack may last only for a few minutes, or it may continue for two or three days. In some instances it gradually subsides; in others it passes off in a moment, and the patient is at once restored to his usual state of health.

Prognosis.—You must first ascertain if there is any disease of the organ that may account for its increased irritability. In case of organic disease the prognosis depends on its nature and degree; where there is no anatomical alteration the prognosis is favorable, although the attacks may frequently recur, and the restoration to health may be slow and tedious.

The indications *for the treatment during the attacks* are similar to those required for other acute nervous disorders.

Treatment during an Attack of Palpitation. (p. 29).

A. Your efforts must be directed to discover and remove any condition that may have excited the increased action of the heart. If, for instance, you have reason to believe that it has arisen from acidity resulting from indigestion, you may prescribe liquor potassæ or magnesia, along with some carminative, such as peppermint or cinnamon water (F. 213). The alkaline carbonates are usually less useful, as the carbonic acid evolved by their decomposition is apt to increase the flatulent distension. Where feculent accumulations seem to have been the exciting cause a stimulating enema or a dose of some aperient medicine will afford relief (F. 135). When it has been produced by mental excitement you may prescribe bromide of potash, hyoscyamus, or morphia, alone or in combination (F. 99).

C. In most cases sedatives, in some form or another, are required. In severe attacks you may employ morphia subcutaneously (one eighth or a quarter of a grain); in slighter ones you may trust to bromide of potash, hyoscyamus (F. 85), or chloral (F. 98). A combination of morphia, ether, and camphor, is a favourite prescription with many practitioners (F. 71).

Where the symptoms are not very distressing a plaster of belladonna or opium often affords relief, or a liniment of chloroform and belladonna may be used over the heart (F. 89). Some foreign physicians speak highly of the use of cold evaporating lotions and of the ice bag. The latter should be employed with caution, if you have any reason to suspect dilatation or fatty degeneration of the organ.

D. You must insist upon perfect rest. Let the patient remain in bed with the head raised, as the breathing is more easy in that position.

Treatment to prevent Attacks of Palpitation (p. 39).

A. You meet with two classes of cases of palpitation unattended by organic disease of the heart. One is most common amongst men, and appears to arise from a disordered state of the digestion, acting upon a nervous system, either naturally over-excitable, or whose excitability has been increased by gout, overfeeding, the abuse of alcohol, or some other cause. In this variety you must direct your attention entirely to the digestive and eliminating organs. You will find it an advantage to add to your ordinary remedies some sedative, such as hyoscyamus, conium, or small doses of morphia. Avoid severe purgatives, as patients in this condition are generally very susceptible to their action. You may lessen the irritability of the heart by placing a plaster of belladonna or opium over it. The second class of cases occurs chiefly in females whose nervous system has become enfeebled. In such, a slight irritation of any organ is sufficient to produce an attack; and you must, therefore, direct your efforts to restore the tone of the nervous centres. In every case of palpitation you must insist upon your patient avoiding all circumstances likely to enfeeble the nervous system, such as an immoderate use of tea, coffee, or tobacco. See that he has sufficient sleep, and does not exhaust himself by study or other mental excitement.

F. Regulate the diet carefully, for indigestion in its slightest form is apt to bring on an attack of palpitation in those predisposed to it. Remember that in many the stomach is not so much in fault as the colon. If you find that mucus is habitually present in the evacuations, and that the motions are knotty, you will often be able to relieve your patient by attention to the functions of the large intestine alone (F. 141). In females you will perhaps be able to discover that the nervous system has been weakened by the long continuance of some discharge. Usually it is excessive menstruation or leucorrhœa that requires to be restrained, but in other instances there may be bleeding from piles or prolonged lactation.

H. Where you have reason to believe an enfeebled state of the nervous centres is present you may prescribe zinc, iron (F. 35), strychnia (F. 94), or cod-liver oil, supporting nutrition by means of a liberal diet and a moderate amount of alcohol. One of the most useful prescriptions for this purpose is a combination of valerianate of zinc, quinine, and rhubarb pill (F. 70).

FAINTING.

One of the most important subjects in medical practice is the sudden or gradual failing of the power of the heart. When this takes place suddenly the brain is, of course, imperfectly supplied with blood, and fainting is the result. You will be often consulted for a liability to attacks of fainting; young and delicate females are most subject to it, and a little inquiry will generally show that either the catamenial functions are disordered, or that the digestive process is enfeebled, and attention to these points will usually suffice to remove the complaint. But you must bear in mind that what is described as fainting may be a slight attack of epilepsy. Therefore, carefully inquire into the family history, ascertain if the patient falls suddenly, if she sleeps after the attack, or if she ever faints when in the recumbent position. If such be the case you will have grounds for a suspicion that the fainting is of an epileptic character. In older persons a tendency to fainting should lead you to investigate the state of the heart, lest it be the seat of valvular disease or of fatty degeneration.

GRADUAL FAILURE OF THE HEART'S POWER.

This is one of the most common causes of death in both acute and chronic diseases. As a free circulation of blood is necessary for the performance of the function of every organ, the ill effects of a weakened state of the heart rapidly show themselves. The nervous system becomes enfeebled, the circulation through the lungs embarrassed, the muscular power fails, and the patient is incapable of exertion. The indication to which we chiefly trust is the state of the pulse, which becomes small and compressible, in proportion to the feebleness of the heart's contraction. This failure of the heart may originate in different ways. 1. It may arise from a simple deficiency in the quantity of the blood, starving the contractile fibres of their due supply of nutriment; thus, it often occurs after hemorrhage or wasting disorders, such as diarrhœa and dysentery, and as the result of fevers. 2. It may be caused by an abnormal state of the blood, preventing those chemical changes that are necessary for the development of muscular action, as in diseased kidneys, pyæmia, and other like disorders. 3. It may result from alterations in the muscular structure itself, for instance, after inflammation of the heart, or in fatty degeneration. 4. Again, it may be the consequence of affections of the nervous system, as in certain forms of apoplexy. But in whatever manner failure of the power of the heart may arise, the organ is so necessary to life that you must at once direct your attention to it, and should put aside all treatment that may interfere with this object.

Treatment.—Insist upon perfect rest, and, if not contraindicated by other circumstances, let the head be kept low. This enables the heart to recruit its strength by reducing the expenditure of force to the smallest amount consistent with the continuance of life. Prescribe stimulants, with or without tonics, at frequent intervals. The best of these are ammonia (F. 49), alcohol, and ether (F. 53, 54). If tonics are requisite you may use quinine, cinchona (F. 50), or iron. Then you may assist the action of the heart by external stimulants, such as poultices of mustard, stimulating liniments, and heat to the extremities. Be careful to keep the room warm, and at an even temperature. Above all, see your patient is well supplied with food, in a liquid and easily digestible form, such as hot soup, beef tea, milk, eggs, &c. It is a good plan to combine stimulants and nourishment, and the Mistura Spiritus Vini Gallici is a valuable formula for this purpose.

PAIN IN THE CARDIAC REGION.

This is a common complaint. It may be continuous or occur in paroxysms, one form of the latter being known as angina pectoris. In all cases have the clothes removed and carefully examine the part, for pain in this region may be produced, when recent, by herpes zoster, or, when of a chronic character, by a syphilitic node upon one of the ribs or costal cartilages.

Continuous pain is commonly referred to the fourth or fifth intercostal space. It may arise from different causes. For example, from pleurisy, from intercostal rheumatism, or more rarely from diseased heart; it is much less frequently connected with cardiac disease than is supposed by unprofessional persons. It may also be the result of disease of the spine, or of an aneurism pressing on the vertebræ. Under such circumstances there is pain on each side, although it may be more severe on one than the other. The most general causes of intercostal neuralgia are dyspepsia arising from an affection of the colon and irritation of the uterus or ovary. Of course you must in each case try to remove the cause of the pain, but you will often be able to afford temporary relief by the application of an opium or belladonna plaster, or by the use of a liniment of belladonna (F. 89), aconite (F. 86), or some other sedative to the painful part.

ANGINA PECTORIS.

Prognosis.—The paroxysms vary greatly in frequency and severity. In some persons they occur only at long intervals, in others the slightest agitation or excitement suffices to induce them. They are always of dangerous import, and, as a rule, sooner or later terminate fatally, but it is rare for a first attack to prove fatal. If you fail to discover cardiac disease examine carefully for evidence of aortic aneurism. You must, however, be on your guard not to confound with this fatal affection a numbness of the left arm and fingers that often arises from flatulence, and which may be readily cured by attention to diet and regimen.

TREATMENT (p. 29).—A. If you can discover any exciting cause, such as a recent meal of indigestible food, you had better act briskly on the bowels with a dose of calomel and colocynth (F. 145) or an enema. Where flatulence and acidity are prominent symptoms you may prescribe magnesia, soda, or potash, along with chloroform or peppermint water (F. 205, 213).

B. The pallor of the face and the feebleness of the pulse seem to show that there is failure of the muscular power of the heart. When these signs are present you must give brandy, ammonia (F. 49), or ether (F. 51), and repeat the dose as often as seems necessary. If the pulse is intermitting you may combine digitalis in moderate doses with them. A large mustard poultice to the epigastrium often gives relief. Some prefer the use of hot fomentations to the region of the heart, whilst others trust to mustard foot-baths. The objection to the use of the bath is that it disturbs the patient, who is always anxious to remain perfectly at rest.

C. Relief of the agonizing pain that accompanies the attacks is the most important indication, and opium is superior to any other drug for this purpose. You may inject a quarter of a grain of morphia subcutaneously, and repeat it as often as seems requisite. Others prescribe forty minims of the tincture of opium along with thirty minims of the spirit of ether. Before giving large and repeated doses of opium you should test the urine for albumen, and if this be present you should use it with great caution. Chloral has been recommended, but it is inferior to opium. In severe cases, or where the attacks recur frequently, the inhalation of chloroform and ether may be employed, but bear in mind that the former of these is very apt to depress the action of the heart. Of late years the nitrite of amyl has been had recourse to, and generally with benefit. Two or three minims should be inhaled, and if no ill effects are observable the dose may be increased to four or six minims. Hermetically closed gelatine envelopes are manufactured, containing a proper dose of this valuable remedy, which can be carried about by the patient. As soon as the symptoms of an attack are felt a perle may be broken and the drug inhaled at once.

D. The patient instinctively remains at rest in the sitting position, and seems to dread the slightest muscular exertion. He should not be disturbed until the pain has completely passed away, as any movement is apt to give rise to a recurrence of the attack.

A long course of arsenic in small doses is often of great value in warding off the attacks of angina pectoris.

SECTION II.

Acute Diseases of the Heart.

Acute Pericarditis.

Prognosis.—This disease usually runs its course in from ten to twenty days. The danger depends chiefly on the cause producing it, for there seems no reason to suppose that inflammation of the serous membrane covering the heart is necessarily attended with risk to the life of the patient. Idiopathic pericarditis is very rare; occasionally, it results from accidents, but if the injury is slight it soon subsides. Its most common cause is acute rheumatism; it ordinarily shows itself early in the disease, and ends in recovery. Where it follows pleurisy the prognosis is usually favorable. On the contrary, when it occurs in persons affected with diseased kidneys or pyæmia it is almost always fatal. The danger from pericarditis usually arises from failure in the heart's power, from the pressure of the fluid embarrassing its motions, or from the inflammatory action having also affected the muscular structure.

Treatment (p. 23).—A. You usually persist in the treatment required for the disease that has produced the inflammation. Thus, you continue salicylate of soda or alkalies in acute rheumatism, quinine in pyæmia, and eliminating remedies in renal disease.

B. The large bleedings formerly advised in pericarditis are now never used, for they are useless in rheumatic cases and injurious where the disease has arisen from pyæmia or renal disorders. Leeches are often of advantage in young and vigorous subjects, in relieving pain and dyspnœa; they should be applied only in the early stage, and may be repeated if necessary. In all cases you may give relief by the employment of hot poultices and fomentations to the cardiac region. Some have recommended ice and cold lotions, but less comfort is obtained from them than from poulticing.

Whenever signs of failure of the heart are observed you must have recourse to alcohol or ammonia (F. 49), to which quinine or cinchona (F. 52) may be added if necessary.

C. In rheumatic cases you usually trust to opium, to allay the excessive action of the heart and to alleviate pain. If there be no contraindication, half a grain may be given every four hours, or morphia may be used subcutaneously. In kidney cases you should give it sparingly or withhold it. As the pain is generally trifling in pyæmia and the heart is depressed, you seldom prescribe opium unless in combination with alcohol and other stimulants.

In some cases the pain is intense, and yet the heart is too feeble to bear large doses of opium. Under such circumstances you may employ a liniment of chloroform and belladonna, or sprinkle half a grain of morphia on a blistered surface over the heart.

D. In no disease is it more necessary to insist upon perfect rest. Let your patient remain in bed with the head raised, for fatal fainting not unfrequently follows attempts at muscular exertion.

E. The patient must be restricted to milk, beef tea, and farinaceous food, unless signs of failure of the heart show themselves, when a more liberal diet should be given.

G. Usually the effusion is absorbed as soon as the inflammation subsides, but where absorption seems to go on slowly you may give digitalis and other diuretic remedies (F. 166). In rheumatic cases blisters seem to act well, but if the area of dulness remains large for some time, the iodine liniment may be painted over the part.

In some instances, where the heart has been oppressed by an unusual amount of effusion, the aspirator has been used, and the life of the patient apparently saved.

ENDOCARDITIS.

Prognosis.—It is difficult to estimate the duration of this disease, for the local symptoms are usually slight, and the others are often masked by, or merged in those arising from some other malady with which it is associated. In almost all cases it results from a general disorder. Thus, it is more common than even pericarditis in rheumatic fever, and it occurs also in chorea, pyæmia, eruptive fevers, and other acute disorders. There is, as a rule, little immediate danger from the ordinary form of endocarditis, but its future consequences are most serious, as it gives rise to thickening of the valves and to emboli.

The emboli consist either of vegetations caused by an exudation of lymph upon the valves, or of clots of blood which form on the surface of the endocardium when roughened by inflammation. These are apt to be swept away by the current of blood, and the amount of danger arising from them depends partly on their size, partly on the structure of the organ whose circulation is obstructed by them. If, for example, a large cerebral vessel is suddenly blocked up you may have fatal apoplexy; if the spleen is the seat of the embolism there may be tenderness on pressure, enlargement of the organ, and periodical elevations of temperature, like attacks of ague; if the kidneys are implicated, blood and albuminous urine, and even dropsy, may result. Emboli are occasionally produced where there are no physical signs of endocarditis, for murmurs in the heart are only heard when the valves are affected, and if the endocardium covering the surface of the ventricle be the sole seat of the inflammation, ulceration may be present, with the formation of clots upon it, without any indication that can be discovered by the stethoscope.

There is a form of ulcerative endocarditis which has been named *diphtheritic endocarditis.* It may occur as a primary disorder, but ordinarily accompanies or follows acute rheumatism, scarlatina, puerperal fever, or pyæmia; it is often very difficult of diagnosis and usually has a fatal termination. In one form it is ushered in with severe pains of the joints, rigors and headache, which are quickly followed by delirium, rapid breathing, quick pulse, and high temperature. In another the patient is attacked with rigors, followed by a high temperature, which subsides in a few hours, but occurs daily or every other day like intermittent fever, the spleen being at the same time enlarged. In both cases embolism of various organs can be detected after death.

Treatment (p. 23).—**A.** You continue the treatment of the disease with which the inflammation of the endocardium is accompanied, whether this be acute rheumatism, chorea, or pyæmia.

B. Venesection and leeches, which were formerly recommended, are now never employed. As so much of the mischief produced by endocarditis arises from the deposition of fibrin, you might expect that one of your chief indications would be to lessen the amount of this substance in the blood. Bloodletting was formerly supposed to effect this object, but it is now known that it does not do so. Salines (F. 175), alkalies (F. 208), and the reduction of the heat of the body, seem more likely to be useful, and may be employed if there are no contraindications to their use. Any failure of the heart's power must, of course, be treated with stimulants.

C. There is seldom much pain, so that opium is not required, as in pericarditis. The sense of oppression, that in some cases is so distressing to the patient, may be relieved by hot fomentations and poultices.

D. Insist upon perfect rest, but allow the patient to choose the position most agreeable to him. He should not leave his bed until all symptoms of fever have disappeared.

E. The diet should consist of liquids as long as febrile symptoms persist.

G. The treatment of emboli depends upon the organ affected, as we have no remedies capable of dissolving a plug that has become impacted in an artery. In time it may be absorbed, and in that case, unless the obstructed vessel is of large size, and the parts around it diseased, recovery may take place. Where, however, an important organ, like the brain, is the seat of the injury, permanent alteration of structure generally follows.

When the main artery of a limb is obstructed it should be placed in a state of perfect rest. The circulation should be assisted by gentle frictions, and the limb should be wrapped in flannel or cotton wool to maintain the heat. If pain is severe, morphia, or some other sedative, must be given in frequent doses.

HYPERTROPHY OF THE HEART.

Prognosis.—This is always a chronic disorder, and generally arises from increased muscular action required to overcome some obstruction in the circulation. It is therefore, in most cases, scarcely to be called a disease, and may be looked upon as a friend rather than a foe to the patient. In rare cases it becomes dangerous, when from some mental or physical excitement, the action of the heart is suddenly and greatly augmented. Under such circumstances the vascular tension may be increased to such an extent that one of the vessels of the brain may be ruptured, and apoplexy produced.

Treatment.—It is rarely necessary to treat hypertrophy, excepting to relieve symptoms that may be distressing to the patient. You are generally consulted either on account of palpitation or dyspnœa. The palpitation seldom comes on in paroxysms, as when it arises from nervous derangement, but is troublesome after any unusual exertion or excitement. You will often be able to relieve this symptom by directing the patient to wear a belladonna or opium plaster over the heart. The diet should be carefully regulated, small quantities of food only being allowed at each meal, and alcohol must be forbidden. Tea, coffee, and tobacco should be taken in very moderate quantities. The bowels must be freely opened, and an occasional dose of calomel or blue pill is often of great service (F. 143). In nervous persons the palpitation may be relieved by the use of some sedative, such as hyoscyamus or hydrocyanic acid (F. 85), in combination with alkalies. Many practitioners seek to lessen the power of the heart by means of aconite (F. 63) or veratrum viride. The two latter should be given with caution, lest the organ be too much enfeebled. Small doses of digitalis are recommended by some, but it is seldom of much value where the hypertrophy is in excess of dilatation. Where you have reason to suspect that fatty degeneration has taken place, tonics should be prescribed.

DILATATION OF THE HEART.

Prognosis.—Dilatation is the most important of the diseases of the heart, because most of the other affections are dangerous only when they have become complicated with it. As a general rule, dilatation begins and progresses slowly, but occasionally its course is rapid, and not more than two or three weeks elapse between the onset of dangerous symptoms and the time when the patient believed himself to be in perfect health.

The prognosis is favorable in proportion to the amount of hypertrophy that accompanies it; for, as the ill effects of dilatation arise from the imperfect propulsion of the heart's contents, so an increased strength of the walls is capable of compensating to a certain extent for an enlarged capacity of the cardiac chambers. The prospect is also more favorable when the left side is alone affected, as the pressure on the veins is then limited to the pulmonary circulation. As soon as the right side becomes also dilated, a backward pressure is exerted on the blood-vessels of all the organs of the body, and their functions are seriously impaired. In persons belonging to the richer classes of society a moderate amount of dilatation of the heart may be present for many years without much serious detriment to the health; but amongst the poor, whose strength is apt to be depressed by want, exposure, or excesses, the cases are more rapidly hurried to a fatal termination. Dropsy is an unfavorable sign, for, although it may be removed by medical aid, it shows that the balance of the circulation has been destroyed, and it is therefore very liable to recur. Hæmoptysis, in like manner, is a serious symptom, as proving that an important organ has become greatly congested or inflamed.

For the same reason enlargement of the liver and albuminous urine are signs of dangerous import. Irregularity and intermission of the pulse are ill omens, as pointing to a serious loss of strength in the muscular power of the heart. You must not, however, forget that intermission of the pulse is habitual with some healthy persons, and may exist for a life time without any disease of the cardiac structures.

Treatment (p. 37).—Patients will frequently consult you for some trifling affection, in whom physical examination reveals, to your surprise, dilatation of the heart. In such the ill effects of the enlarged heart are prevented by the accompanying hypertrophy, and so long as the organ is able to perform its work you need not interfere. But you must bear in mind that these persons may at any time become the subjects of an increase of the dilatation, and therefore you should advise them to avoid excessive bodily exertion, or any other circumstance likely to lessen the tone of the heart's walls.

A. In most cases you are incapable of discovering any cause that can be removed, and you must therefore try to prevent the circumstances that are likely to increase or maintain the dilatation, viz. plethora of the vascular system, or loss of tone in the muscular structure of the organ.

You would naturally think that venesection would be the best method of reducing the contents of the vascular system. But you must remember that every muscle must be freely supplied with blood to enable it to contract with due force, and we therefore find that abstraction of blood promotes a tendency to dilatation.

F. In order to reduce the vascular contents it is better that you should direct your patient to eat sparingly and to avoid much liquid food, such as soup, milk, malt liquors, &c. The occasional use of diuretics and of hydragogue cathartics will greatly assist you in meeting this indication.

H. Digitalis is the best tonic in all cases of dilated heart, and at the same time, by its diuretic action, it assists in reducing the amount of fluid in the vascular system. If there are no dangerous symptoms you may prescribe it in moderate doses for a week or two at a time, merely as a heart tonic (F. 55), but when any complications arise it must be used more freely. The greater the feebleness of the heart the more useful is this invaluable medicine.

So long as dilatation is in excess of hypertrophy your aim must be to increase the tone of the muscular walls of the heart. In almost every case, therefore, you will find it an advantage from time to time to prescribe iron (F. 39), strychnia (F. 91), quinine (F. 33), or some other tonic, with or without digitalis, in order to improve the nutrition of the organ. When iron is unsuitable arsenic is often of great value, but it should be given in small doses and for a length of time. As regards exercise, if there be no contraindicating circumstance, let the patient take it regularly and systematically, carefully avoiding all fatigue, hurry, or excitement.

You are often not consulted until venous congestion of some organ has made its appearance. This may affect either the pulmonary or the general circulation.

Difficulty of breathing is the prominent symptom of which the patient complains when the lungs are overloaded with blood. But you should remember that dyspnœa in persons suffering from heart disease may be due, not only to congestion, but also to bronchitis, to effusion of fluid into the pleuræ and pulmonary textures, and to spasm of the bronchial tubes. You must first ascertain from which of these causes it arises. If from œdema, you have watery expectoration, fine crepitation at the bases of the lungs, and also, generally some dulness on percussion, feebleness of respiration and of tactile fremitus from coexisting hydrothorax. You treat œdema of the lungs as you would a dropsical effusion affecting the limbs. When the dyspnœa is of a spasmodic character it occurs, or is much increased, at certain times, especially at nights. You can hear sonorous and sibilant râles, the expectoration is neither watery nor stained with blood, and there is no dulness on percussion. Such cases are relieved by sedatives, combined with antispasmodics, or by the subcutaneous injection of morphia. When there is bronchitis without asthma, as is often the case in dilatation confined to the left side of the heart, you treat it on general principles, bearing in mind the necessity of depleting the circulation by means of diuretics, and of maintaining the tone of the muscular walls with digitalis.

The most serious and difficult case you have to treat is where there is *acute congestion of the lungs*, associated with dilatation of both sides of the heart. Here the expectoration is often bloody, and there are dulness on percussion, and fine crepitations at the bases of the lungs. The heart's action is also rapid, often irregular and intermitting. In many cases the congestion is produced by embolism of the pulmonary arteries resulting from clots detached from the right side of the heart. The indications are the same as for acute inflammation.

Treatment (p. 23).—**A.** The cause being the overloaded state of the heart you must prescribe digitalis (F. 162), with some other diuretics, in order to deplete the circulation, whilst you give tone to the cardiac walls. Where the right side of the heart is much dilated, the liver enlarged, and the urine scanty, you will find the addition of mercury of great value (F. 167). In the slighter cases this treatment will be sufficient to afford relief.

B. It is in severe cases of this nature that you may expect benefit from venesection. Blood should be taken if the dyspnœa is very severe, the face of the patient blue, and the whole venous system greatly engorged. You should, however, abstract no more than is requisite to afford relief; generally six or eight ounces are sufficient. It is better to repeat the bleeding than to draw away a large quantity at once, lest you enfeeble the heart and increase the tendency to dropsy. The more recent the congestion the greater is the relief from venesection. It succeeds best in obstructive mitral disease, and is rarely of any service in regurgitation through the aortic valves. At the same time you withdraw blood you may stimulate the heart by means of alcohol, ammonia (F. 51), or ether. The present tendency of medical practice is, however, to abuse stimulants, and to neglect the diminution of the blood that is unable to travel through the obstructed pulmonary circulation. In children or feeble persons you may apply leeches, and if bloodletting seems not to be desirable you may try to give relief by dry cupping.

C. The loss of sleep is often very distressing; not unfrequently delirium is present. Now the question arises—Should you give sedatives? In a case of acute pulmonary congestion or of hydrothorax it is always a doubtful measure, for the lungs are apt to become more overloaded with blood when the excitability of the respiratory centre is lessened by narcotics, and the forced efforts at inspiration thereby diminished. When the dyspnœa is of a spasmodic character, and comes on chiefly at night, a sedative often gives great relief, and enables the patient to pass through the day with comfort. Where you think it advisable to give sedatives you will find bromide of potash (F. 74), tincture of hyoscyamus (F. 85), and Indian hemp, the best.

D. You must keep your patient at rest. He will generally prefer the erect posture. Let him be well propped up, so that no muscular effort is required to enable him to maintain his position.

The indications for the *treatment of cardiac dropsy* are the same as those required for other forms of this condition (p. 35).

A. First ascertain if there is albumen in the urine, as the coexistence of disease of the kidneys will greatly interfere with the success of your remedies. Œdema of the legs often remains, in a slight degree, from a loss of the elasticity of the skin after the dropsy has been removed. Where such seems to be the case bandages are of value. In the later stages the swelling may result from the anæmia produced by the remedies you have employed, and when you suspect this you must prescribe steel (F. 39), quinine (F. 37), and a liberal diet.

F. Where the kidneys are not greatly implicated digitalis is by far the best diuretic. It may be combined with the acetate or acid tartrate of potash, or other remedies (F. 166). Where a stimulating diuretic is required copaiba will be found useful. There is an objection to the use of hydragogue cathartics, on account of their action causing so much disturbance of the position of the patient; but where the urine is albuminous and the kidneys fail to respond to diuretics they must be prescribed. The compound powder of jalap, with or without gamboge (F. 149), is one of the most reliable, but in other cases you may employ elaterium (F. 152). Care must be taken in the use of these remedies when there is aortic regurgitation, lest they should cause fainting, or increase, by the feebleness they produce, the dilatation of the ventricle. You seldom get much advantage from acting on the skin.

Where diuretics and purgatives are insufficient to relieve, you may puncture the skin of a dropsical limb to allow the fluid to escape. This operation generally succeeds better than where disease of the kidneys is the cause of the dropsy. The punctures may be made with a common needle, the surface being previously smeared over with oil containing carbolic acid, and the limb being afterwards laid upon flannels, into which the fluid is allowed to soak. Some prefer a fine canula, which is inserted near the ankle and allowed to remain in the cellular tissue. Hydro-pericardium, which so often accompanies cardiac disease, requires no special treatment. When the fluid in dropsy is rapidly removed the patient may feel excessively feeble, and dangerous and even fatal faintings may result. In such cases you must give stimulants freely, and insist on perfect rest in the recumbent position.

DISEASED VALVES.

Prognosis.—Students make great mistakes in their estimation of the danger connected with anatomical changes in the cardiac valves. They often expect that speedy, perhaps sudden, death will be a necessary consequence of the lesions which the stethoscope reveals to them. The importance of an alteration in the structure of a valve depends entirely upon the changes it may produce in the walls of the heart, for if no dilatation results we need not dread it, however loud the sound may be. In every case, then, before committing yourself to a prognosis, ascertain if the cavities are dilated, and if any signs of venous obstruction can be discovered. As a general rule, the direct are of less consequence than the diastolic or presystolic murmurs, the former being often the result of anæmia, the latter being always of organic origin.

Mitral systolic murmurs may be present for many years without any deterioration of the general health. Mitral presystolic murmurs are of shorter duration, and, sooner or later, become associated with symptoms of congestion of the lungs and dilated heart. Aortic systolic are of the least significance of all the heart murmurs, as in many cases they result only from anæmia. Diastolic aortic murmurs, on the contrary, sooner or later are accompanied by alterations in the size of the heart; you estimate the amount of disease, not by the loudness of the sound, but by the alteration of the pulse. I have, however, known patients with this murmur go through their ordinary duties for many years. The murmurs of the right side of the heart, excepting the *direct pulmonic*, are always dangerous.

Treatment.—The management of a valvular lesion entirely depends on the condition of the walls of the heart. You must first inquire whether there is dilatation, and, if so, if there is a sufficient amount of hypertrophy to compensate for it. In case there is no dilatation, or if there is a sufficient thickening of the walls to compensate for the increased size of the cavities, there is no ground for your interference, however loud may be the sound you hear by the stethoscope. There are, however, certain symptoms connected with disease of each valve you will be called upon to relieve.

Persons with mitral regurgitation often suffer from bronchitis, caused by the backward pressure of the blood in the bronchial veins, when no other ill effects are produced. In such cases you treat the bronchitis on general principles, excepting that you bear in mind the necessity of maintaining the tone of the heart by means of digitalis, and keeping the quantity of the circulating fluid as small as possible by diuretics. In diastolic aortic disease one of the most distressing symptoms is a severe cramping pain across the chest and arms, like angina pectoris, coming on after exertion or during the night. The patient ought to wear a belladonna or opiate plaster over the heart. Do not in the early stage give digitalis, as it lengthens the diastole of the heart, and thereby augments the time during which the blood streams back into the ventricle. But at a later period, when the right side of the heart has become dilated, you may use digitalis with decided benefit. Ergot, in combination with quinine, often seems to relieve the tendency to angina; in most cases, however, you will find more benefit from small doses of morphia and ether. The attacks at night are especially difficult to alleviate; they seem to depend on an accumulation of flatus, and the pain generally passes away as soon as this can be expelled. You will find it a good plan to make the patient dine in the middle of the day, to eat sparingly, to take only a very light supper, to keep the bowels open by a carminative and aperient draught (F. 119), and to obviate the tendency to flatulence by appropriate measures. Be careful to avoid severe, and especially saline, purgatives. A cup of coffee or soup should be kept hot during the night, and taken as soon as the pain comes on.

SECTION IV.

Aneurism of the Aorta.

Prognosis.—This is always unfavorable. The duration of the disease varies greatly, according to the position of the aneurism. Its course is more rapid when its walls are in contact with the trachea or œsophagus than when they are strengthened by the external framework of the chest. In the former case only a few months may elapse from the first symptoms to the fatal termination; in the latter death may be postponed for some years.

Treatment.—Various plans have been proposed for the cure of aortic aneurism. Where the sac is situated in the abdomen, at a part which admits of pressure being made above it, a cure can be effected by compression of the artery. Pressure on the distal side of an abdominal aneurism has been practised, but hitherto unsuccessfully. Various methods have been employed to promote the coagulation of the blood in the sac. Needles have been passed into it, and a galvanic current directed through them. A solution of perchloride of iron has been injected, but with unfavorable results. Some have practised the subcutaneous injection of ergotine over the tumour, on the supposition that the muscular structure of the artery might be thereby contracted; but this has also ended in failure. Finally, fine iron wire has been inserted into the aneurism, in order that the fibrin might collect around it, but in each case thus treated fatal inflammation of the sac has been produced.

As all efforts at a radical cure of the tumour have hitherto failed, we are recommended to keep the patient as much at rest as possible, so as to lessen the action of the heart. This is more especially necessary where the sac presses upon important structures. The diet should be of an unstimulating character, consisting of milk, vegetables, fruit, bread, and a small proportion of meat, only moderate quantities of food being allowed at each meal. It has been proposed to lessen the action of the heart by digitalis, aconite, and veratrum, but no benefit has resulted from this plan. The acetate of lead, tannic acid, alum, and other astringents, have also been employed, on the supposition that they might coagulate the blood in the sac; but no good results have followed their use.

For the relief of pain, a few leeches may be occasionally applied over the tumour, followed by poultices, if the sac is still at a considerable depth from the surface; but when superficial an ice-bag affords more relief. Throughout the whole case you will have to employ sedatives, the subcutaneous injection of morphia being the most useful. A long course of iodide of potash generally relieves the patient's sufferings, especially when you have reason to believe the complaint is of syphilitic origin, but it should be given in considerable doses, say ten or fifteen grains, three times a day.

CHAPTER V.

DISEASES OF THE LARYNX.

VARIOUS medicines can be applied directly to the mucous membrane of the air passages with great advantage. This may be effected either by inhalers, or by instruments that disperse medicated fluids in the shape of spray.

The simplest form of inhaler is a jar with a narrow mouth, in which the medicinal substance is placed, together with some hot water. The patient inhales the steam as it arises, his head being covered with a cloth that falls over and envelopes the jar. Various improvements on this have been contrived. Thus, Corbyn's inhaler (Fig. 2) consists of a jar fitted with a mouth-piece, the temperature of the water being indicated by a thermometer. In some cases the medicine is dropped upon a sponge instead of being simply mixed with the hot water. Some inhalers are supplied with a spirit-lamp, so that the heat of the fluid can be readily maintained at the same temperature. The best heat for the water is from 120° to 150°. It is a good plan to commence at 120°, and gradually to increase the warmth as the patient becomes accustomed to its use.

The substances ordered in the British Pharmacopœia for inhalation, with which hot water is used, are iodine, creasote, and conium; hydrocyanic acid and chlorine, are employed mixed with cold water. Dr. Mackenzie recommends also the pinus sylvestris and the oil of juniper.

Many drugs can be used in the form of spray which cannot be used in inhalation. In the various kinds of nebulizers the medicinal solution is driven through a minute tube, and dispersed in the shape of spray. In one apparatus the current of air is set in motion by the compression of an india-rubber ball (see Fig. 3), but the spray thus produced is seldom capable of penetrating below the larynx. It is very convenient when you wish to apply your remedies to the nose, throat, or larynx, but is of little use in bronchitis.

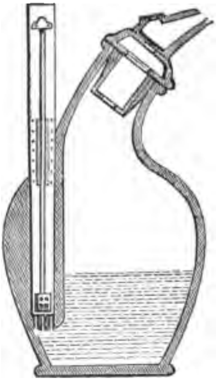


FIG. 2.—Corbyn's Inhaler.

In Siegle's apparatus (see Fig. 4) steam is employed, and the force with which the fluid is propelled is sufficient to carry it into the bronchial tubes. The following remarks by Cohen are worthy of attention:—"The materials used should be chemically pure, and the solution should be well filtered before using, in order that no sediment may accumulate to clog up the aperture through which the fine stream of fluid is forced. It is best always to begin with as weak a solution as will suit the case, the substance employed to be selected with reference to its physiological and therapeutic influence on the constitution, as well as for its topical effect. The absorptive power of the mucous membrane of the respiratory organs being much greater than that of the stomach, poisonous substances must be employed with great caution, and their doses be augmented very gradually. The strength of any solution to be employed will vary with the individuality of the patient, his distance from the instrument, the length of the sitting, and similar considerations."*

Besides the employment of medicines in the shape of inhalations and of spray, remedies can be directly applied to the larynx by means of a properly curved brush (see Fig. 5). You will find that considerable practice is necessary before you can acquire the requisite dexterity. These local remedies can be best used with the aid of the laryngoscope in the following manner:—"The laryngeal mirror being held in the left hand, and a camel-hair brush (fixed to a slender rod of aluminium at an angle of about 95° or 100°, and fastened in a wooden handle) in the

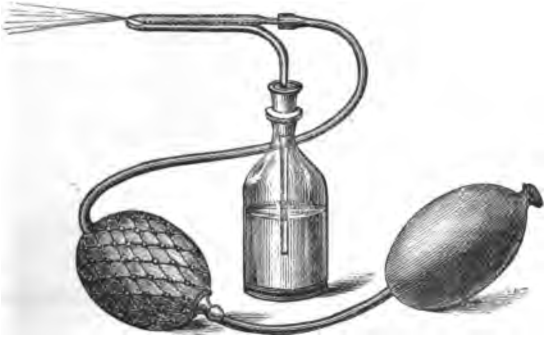


FIG. 3.—India-rubber Nebulizer.

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* 'Inhalation in the Treatment of Disease,' by J. Solis Cohen, M.D.

right hand. Those who do not employ the laryngoscope should hold the patient's tongue well out, in such a position that the posterior wall of the pharynx can be seen, and should then pass the brush down between the latter and the base of the tongue. The old method of pressing down the tongue with a spatula and using a flexible sponge probang could only end in failure."*

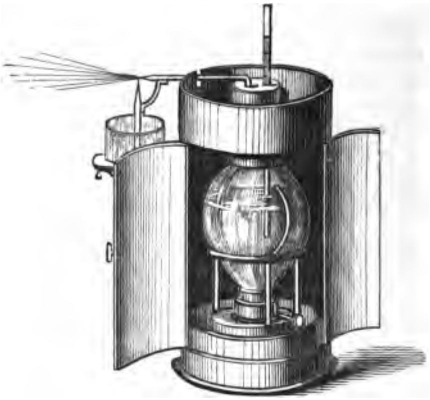

FIG. 4.—Siegle's Steam Nebulizer.

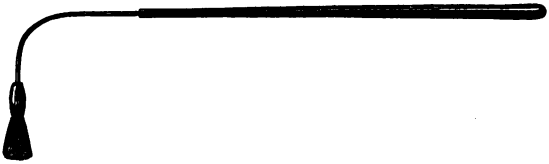

FIG. 5.—Laryngeal Brush.

"By a very simple contrivance the electric current can be applied directly to the vocal cords. The important feature in the laryngeal galvaniser is that the current does not pass beyond the handle till the sponge is in contact with the vocal cords. The instrument is held in the hand between the thumb and second finger, and when the sponge is in contact with the vocal cords the operator with his index finger presses on the spring of the handle, and the electric current passes through the larynx to the skin externally. By placing the sponge of the galvaniser on the arytenoid cartilages both branches of the pneumogastric nerve are stimulated (see Fig. 6). Its employment is indicated in functional aphonia, and in most cases of vocal weakness where there is no structural disease. In some cases one application of internal electricity is sufficient to effect a permanent cure; whilst in others the shocks are required to be repeated daily, on alternate days, or less frequently, for several weeks. I generally introduce the galvaniser into the larynx three or four times at each sitting, keeping it in each time for a few seconds. The source of electricity is not a matter of any importance, but its application to the vocal cords will be facilitated by

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* Dr. Mackenzie, in 'Reynolds' System of Medicine.'

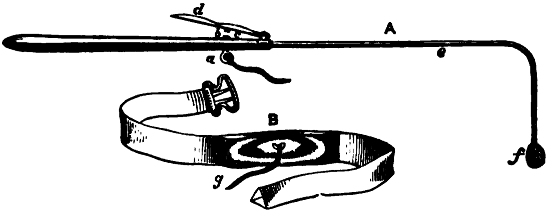

FIG. 6.—Galvaniser and Necklet. A. The laryngeal galvaniser. *a*, a metal ring, by which the galvaniser is connected by a chain either with a battery or a magneto-electric machine; *b*, the extremity of a wire communicating with *a*; *c*, metal point which, when the ivory handle, *d*, is pressed upon, touches *b*. The current then passes along the wire *e* (which is insulated in caoutchouc) to the sponge, *f*. B. The necklet which the patient wears. *g*, the chain by which the necklet is connected to the apparatus producing the electricity.

the patient wearing a kind of elastic necklet, in the centre of which is a piece of metal covered with sponge. This plate of metal, which is enclosed in cotton, is about three inches long, and one and a half broad, and is bent back in the centre, so that when applied it corresponds to the thyroid cartilage. Projecting forwards from the centre of the thyroid pad is a metal eye, by which it may be connected with the electrical machine. The pad should be wetted before it is put on the patient's neck. When the point of the galvaniser is placed on the vocal cords the electric current passes right through them in all directions to reach the pole over the thyroid cartilage."*

SECTION I.

Morbid States not necessarily dependent on Organic Disease.

Laryngismus Stridulus (False Croup).

Prognosis.—The danger from laryngeal spasm is greatest in very young children, and especially in those who are in feeble health. An occasional spasm generally passes off without injury, but the prospect is gloomy where the attacks repeatedly recur, and where they are attended or followed by general convulsions.

Treatment during an Attack (p. 29).

A. The spasm generally comes on so suddenly that there is but little time for treatment. The child should be placed in a warm bath as quickly as possible, and cold water sprinkled over the face and chest, so as to excite forced inspirations. An emetic of ipecacuanha will be useful, if you have reason to suspect over-feeding; if an emetic is not at hand you may excite vomiting by tickling the fauces with a feather. If the teeth are projecting and the gums inflamed the lancet should be used, and a dose of calomel may be administered when the fits show a tendency to rapid recurrence.

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* 'The Use of the Laryngoscope,' by Dr. Morell Mackenzie.

C. In extreme cases the inhalation of a few drops of chloroform may be tried. Where the attacks return frequently the use of small doses of bromide of potash or of chloral is necessary to lessen the irritability of the nervous system. Of the former two to three grains may be given every four hours to a child of one year old; of the latter the same dose, but repeated every six or eight hours.

The Prevention of Attacks (p. 39).

A. Most of the children affected with laryngismus stridulus are of a rickety constitution, and their feeding and general management should be regulated according to the rules laid down for the treatment of that disease. All exciting causes of spasm must be removed, and every occasion of excitement or annoyance avoided. The gums should be carefully watched and the bowels regulated.

F. The diet is of great importance. Infants ought to have a good wet nurse if the mother is unable to afford them sufficient nourishment, or, failing this, they should be fed on milk and lime water, ass's milk, or concentrated Swiss milk. Beef or mutton tea may be given to older children. The effects of farinaceous food must be carefully watched, and its use forbidden, if any signs of gastric or intestinal catarrh show themselves. The child should be kept as quiet as possible, and exposure to damp or cold carefully avoided.

H. Tonics are always required, but it is often difficult to find one that will not disorder the digestion. The hypophosphites of lime and soda are extremely useful, and may be given in doses of one quarter to one grain to children of one year old.

As soon as the stomach is able to digest it some mild form of iron, such as steel wine or the syrup of phosphate of iron, along with cod-liver oil, will be found beneficial.

BILATERAL PARALYSIS OF THE ADDUCTORS OF THE VOCAL CORDS.

Prognosis.—When general debility or hysteria gives rise to the complaint, as generally is the case, the prospect is favorable.

Treatment.—A course of tonics, with good diet, and, if possible, change of air, is usually required. Various stimulant remedies have been recommended to be applied to the larynx, but the employment of galvanism seems to be most successful.

The *prognosis and treatment of unilateral paralysis of the adductors of the vocal cords* are the same as when both cords are paralysed.

BILATERAL PARALYSIS OF THE ABDUCTORS OF THE VOCAL CORDS.

Prognosis.—As this is chiefly the result of cerebral disease the prognosis is unfavorable.

Treatment.—Where the symptoms are of a threatening nature tracheotomy is required to save life. No local treatment is of much avail.

In unilateral paralysis the *prognosis* is generally unfavorable, and we have no means by which we can restore the parts to health.

SECTION II.

ACUTE DISEASES OF THE LARYNX.

ACUTE LARYNGITIS.

Prognosis.—This disease varies greatly in intensity, and is only dangerous when it gives rise to œdema of the glottis, or when, in children, it excites croup. The ordinary cases that accompany bronchial catarrh in adults, and which may be called subacute, scarcely require treatment. When laryngitis follows erysipelas of the head and neck or smallpox it is very dangerous, on account of its tendency to end in œdema. It is impossible to distinguish, in the first instance, an attack of laryngeal catarrh in a child from the commencement of croup. The prognosis should, therefore, be always of a cautious character until you have ascertained the exact nature of the affection.

Treatment (p. 23).—**A.** The mucous membrane affected with inflammation is more sensitive to cold air than when in health. The room must be, therefore, maintained at a moderate heat, which can be best managed by saturating the atmosphere with steam. A kettle, to which a long spout of tin is attached, is very convenient for this purpose. Vessels of this kind are sold under the name of "bronchitis kettles."

B. Depletion is seldom required. Some practitioners recommend the use of leeches to the sternum when the child is plethoric, the pulse firm, and the dyspnœa increasing rapidly. You seldom, however, meet with these conditions amongst a town population, although I have seen great relief given by this means in country practice. In adults the bowels should be freely purged by a saline aperient (F. 59), to which a small proportion of tartar emetic may be added. Mercury used to be given, so as to produce salivation, but is not now employed.

In children, if the loss of voice and other symptoms are trifling, it will be sufficient to prescribe frequent small doses of ipecacuanha wine (F. 178), and see that the bowels are freely opened by some efficient purgative. Where the symptoms are more threatening you had better use an emetic of ipecacuanha; either the wine or the powder will answer. If the emetic does not act quickly, you may tickle the throat with a feather, and force the child to drink freely of warm water. When the ipecacuanha fails to excite vomiting you may employ the sulphate of zinc or sulphate of copper. As soon as vomiting has been induced put the patient into a warm bath, after which it should be removed to bed. If the symptoms are not relieved you must act upon the bowels by a dose of calomel, and keep up a slight state of nausea by small doses of ipecacuanha, or repeat the emetics from time to time. A hot poultice applied to the throat will often afford relief, or a wet compress may be used instead of it.

Stimulants are rarely required unless the heart shows signs of failing. In such cases brandy and ammonia may be given.

In adults, when the symptoms are not severe, the local application of a solution of nitrate of silver, chloride of zinc, or perchloride of iron, to the larynx by means of a brush, is generally of service; but in the more severe cases you had better trust to inhalations and general treatment.

D. The patient must abstain from speaking. When the symptoms are severe he should be confined to bed; in slight cases it will be enough for him to remain in his room.

G. Whenever acute œdema of the glottis presents itself, prompt treatment must be employed if you would save the life of the patient.

The epiglottis should be scarified, either by means of a gum lancet or curved bistoury, the blade of which is covered with plaster to a few lines from its point. If possible the instrument should be guided by the help of the laryngoscope; but where this is not practicable the tongue must be drawn forwards, and the attempt made to reach the swollen epiglottis. An emetic of sulphate of zinc or of sulphate of copper, given before and after the scarification, often affords relief by mechanically pressing out the œdematous fluid. The neck should be fomented with a sponge wrung out of hot water, and the patient should be encouraged slowly to swallow small pieces of ice. If these means fail to remove the dyspnœa tracheotomy ought to be performed without delay. The operation is usually successful.

Croup.

Prognosis.—The prognosis of croup—that is, of acute laryngitis attended with the formation of false membrane—is very unfavorable. Although the mortality has much decreased since the more general use of tracheotomy, children under two years of age rarely recover.

Treatment (p. 23).—**A.** As it is impossible to distinguish, in the early stage, whether an inflammation of the larynx is or is not attended with the formation of false membrane—whether, in fact, you have to deal with true croup or only laryngeal catarrh—the treatment must in either case be the same. The child should have an emetic of ipecacuanha, followed by a brisk aperient, and be placed in a warm bath. In true croup the disease rarely yields to these remedies, and if such be the case the patient ought to be placed in a room filled with steam, whilst nausea is kept up by repeated doses of ipecacuanha or tartar emetic.

B. Some advise venesection or leeches in the early stage, but these are rarely resorted to in the present day. Mercury is also abandoned by modern practitioners.

You seldom require to give stimulants, unless the croup arises from diphtheria. In the later stage, when the heart is beginning to fail, you must, however, prescribe wine, ammonia, infusion of senega (F. 188), or small doses of ether.

C. The chief improvement of late years in the treatment of croup has been in the more early employment of tracheotomy. This should not be delayed, as was formerly the custom, until the child seems about to die, but ought to be performed as soon as the attacks of dyspnœa become so frequent and severe as to show that life is seriously threatened by the obstruction to the respiration.

After the operation the patient should be kept in an atmosphere of steam. This is most easily managed by placing screens around three sides of the bed, and covering the top with a thick blanket (Fig. 7). Into the vacant side let a piece of tin or india-rubber tubing be carried, connected at the other end with the spout of a large kettle placed on the fire. The temperature and moisture around the bed can be thus easily regulated. A well-trained nurse must be constantly present to clear away the false membrane from the tracheotomy tube. This can be done either with a feather or by a piece of perforated india-rubber tubing attached to a syringe. The end of the tubing is passed into the tracheotomy tube, and when the air is sucked through it by the syringe particles of the false membrane are entangled in the holes of the tubing, and can be easily removed.

Various attempts have been made to alter the secretion of the mucous membrane by dropping through the tracheotomy tube solutions of nitrate of silver, chloride of zinc, or lime water. The latter coagulates the false membrane and assists in its detachment; but we know of no liquid that is capable of putting a stop to the formation of the exudation. It is probable that the inability of the child to clear the bronchial tubes by coughing may be one reason for the capillary bronchitis and pneumonia that cause the death of so many after tracheotomy performed for croup. To obviate this, artificial respiration has been employed, and in some cases with benefit. It may be performed by alternately compressing the chest and allowing the ribs to expand. It should be continued for three to five minutes at a time, and be repeated every few hours,

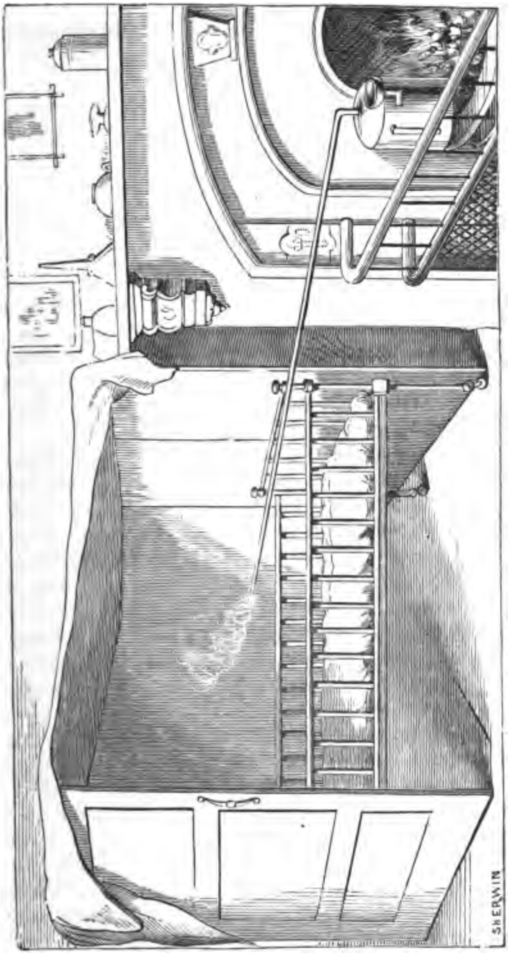

FIG. 7.

or whenever difficulty of breathing comes on. The case should be carefully watched until all signs of danger have passed away.

SECTION III.

CHRONIC DISEASES OF THE LARYNX.

CHRONIC LARYNGITIS.

Prognosis.—This is always very obstinate, and often, like chronic bronchitis, bids defiance to our most strenuous efforts to relieve it. It is especially rebellious to treatment when it occurs in old people, in those who are affected with phthisis, or who are addicted to intemperance.

Treatment (p. 32).—**A.** Where you can discover that the disease has been produced by the inhalation of dust, as occurs in some trades, means must be taken to prevent the irritation. Persons who are obliged to use their voice loudly or very frequently should be advised either to give the larynx complete rest for a time, or to moderate their vocal exertions. Habitual tipplers or excessive smokers often keep up the catarrh by maintaining a chronic inflammation of the pharynx by their pernicious habits, and the effects of persistence in such vices must be plainly set before them. Exposure to damp and to night air must be forbidden. In cases of phthisis the laryngeal affection should, of course, be treated on the same principles as are employed to combat the pulmonary mischief. Syphilitic laryngitis is best treated with iodine or mercury, and the iodine must be given internally, as well as by inhalation. Chronic laryngitis is not uncommon in gouty persons, and is generally associated with a similar affection of the pharynx. It requires alkalies, small doses of colchicum, and strict attention to the diet and regimen. In all cases rest must be given to the vocal organs, and as little talking as possible should be recommended.

H. The main treatment of chronic laryngitis consists in the local use of remedies. Where you are able to attend to the case regularly you should apply once or twice a week, or even more frequently, an astringent or stimulating lotion, with the aid of the laryngoscope. This may consist of nitrate of silver, perchloride of iron, chloride of zinc, or some other metallic preparation (F. 191). Dr. Mackenzie remarks that when there is diminished secretion and the mucous membrane looks red and shining, carbolic acid is the best application. It is a good plan to commence with a weak solution and gradually to increase the strength, as you see the patient can bear it. In other cases the patient may spray the throat daily with an astringent or stimulating lotion, such as tannic acid, nitrate of silver, or sulphurous acid (F. 193). Where the case is of a subacute character inhalations answer better than the spray, and these may be sedative, stimulating, or such as put a stop to decomposition; thus, you may employ conium, hop, or benzoin, or may use creasote or carbolic acid.

Since the introduction of the laryngoscope external applications have fallen into disuse. They are, however, often extremely useful. You may prescribe small blisters over the larynx, or keep up irritation by means of iodine or croton-oil liniments.

CHAPTER VI.

DISEASES OF THE LUNGS.

As the interchange of gases in the lungs takes place only as a result of chemical and physical laws, and is not influenced by any action of the epithelium, as in other excretory organs, we are unable directly to regulate the quantity of oxygen absorbed or of carbonic acid expired. Indirectly, we may effect this object by lessening the amount of carbonic acid produced in the system, or of the oxygen inhaled. As one of the chief sources of carbonic acid is muscular contraction, we are able to diminish by rest and increase by exercise the quantity of carbonic acid that has to be eliminated.

The air enters the lungs with the least muscular exertion in the erect posture, we can, therefore, by maintaining the patient in this position, assist in the due aëration of the blood. The importance of the diaphragm in respiration is often overlooked. Whenever there is great dyspnœa, and the abdomen is distended with fluid in the peritoneum or with gas in the intestines, you will find the removal of the obstruction to the descent of this muscle a matter of much importance. In old people, an ossified state of the costal cartilages renders a free action of the diaphragm more necessary than at an earlier period, and great relief is consequently afforded by the regular use of stimulating aperients.

Inspiration of air condensed by pressure has been employed in emphysema and chronic bronchitis with satisfactory results. Formerly, the patients were enclosed in a chamber of compressed air, but of late years, an apparatus contrived by Waldenburg has been substituted (see Fig. 8). "It is made of sheet zinc, and consists of two cylinders, the larger 1 metre long and 30 c.m. in diameter, in which water is put, and the height at which it stands is indicated by means of a glass tube which runs up on the outside, and is graduated to centimètres. This cylinder has also a stop-cock on a tube at the bottom. The smaller one is 27 c.m. in diameter, and fits into the open top of the larger cylinder. Its bottom is open, and its closed top has two orifices in it, to one of which is fitted a manometer, and to the other a flexible tube, also supplied with a stop-cock, and ending in the mask used in inhaling. Three rods rise from the sides of the outer cylinder. which are furnished with wooden wheels at their tops, over which play the chains which support the inner cylinder, these being fastened to the top of the latter. The free extremities of the chain which hang down outside have cross-bars or hooks, to which weights can be attached, the whole arrangement being very similar to the large receivers at the gas-works. The effect of raising the inner cylinder by hanging weights on the chains is to rarefy the air it contains, while, when the stop-cock at the top is opened and the cylinder is filled with atmospheric air—which can be readily done by simply drawing up the smaller cylinder—the result of sinking it again by placing weights on the top will be to condense the air. The weights added to increase or diminish the density of the contained air are ordinarily from 20 pounds, representing a pressure of $\frac{1}{59}$ atmosphere, to 40 pounds or $\frac{1}{29}$ atmosphere, and Waldenburg doubts if it is advisable to exceed 60 pounds or $\frac{1}{19}$ atmosphere."

Such being the apparatus it is available for several uses, depending on whether the air contained in it be condensed or rarefied, and whether the patient practise inspiration from it or expiration into it, The two principal ways in which it has been used are the following:—First, the air in the receiver being condensed, the patient draws this condensed air into his lungs in inspiration. He holds the mask firmly against his mouth and nose with the left hand, and controls the stop-cock with the right. He should open the mouth and breathe deeply and steadily. The number of respirations required to exhaust, and so depress the cylinder, varies according to the capacity of the lungs of the individual, and serves as a guide to the length of time that the apparatus should be used at one sitting. Usually a sitting of from ten to twenty minutes, at which the receiver is emptied from one to three times, is sufficient. Persons whose lungs are of small capacity, *e. g.*

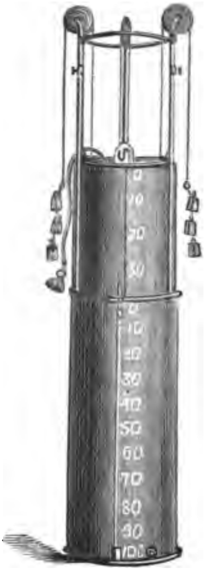

FIG. 8.—Waldenburg's apparatus for compressed air.

women, or those suffering from emphysema, may require from twenty to thirty breaths to empty a receiver which others would empty in from five to eight. Thus, the capacity increases with practice, and is an index of improvement. The condensed air then pours into the lungs, and, until accustomed to it, the patient, or indeed a healthy person, has a slight sense of oppression. Soon, however, he finds that his breathing is easier than usual, and his chest becomes distended. The interchange of gases in the lungs is accelerated, and dyspnœa diminished or removed. The second method may be used by itself or combined with the one just described. It consists in breathing out into the receiver when it contains a rarefied air. Of course the effect is to empty the lungs more thoroughly than usual at the expense of their residual air, and this being naturally followed by a deep inspiration, the effect is a thorough ventilation of the lungs. Expiration into rarefied air produces the most marked increase of the expiratory force.*

I have frequently employed Waldenburg's apparatus, and although the results have not been so satisfactory as might have been expected, some patients have expressed themselves better for its use. Excepting a feeling of oppression at the chest no inconvenience has been experienced in any of my cases.

The only medicines we possess, by which we can act upon the lungs, are comprised in the class of expectorants. They modify the secretions of the mucous membrane of the bronchial tubes, and are divided into nauseating and stimulating expectorants.

The nauseating expectorants are tartar emetic, ipecacuanha, and lobelia. The first two are employed in the acute and subacute stages of pneumonia and bronchitis, especially where the expectoration is scanty and tenacious. Both are depressors of the heart, but the ipecacuanha less so than tartar emetic. Ipecacuanha is prescribed in the cases of children and in subacute bronchitis, and, from its power of increasing the secretion of mucus, is one of the most valuable expectorants. Lobelia is used in cases of bronchitis where spasm of the tubes is also present.

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* Ziemssen's 'Cyclopædia of the Practice of Medicine,' vol. 5, p. 401.

The stimulating expectorants are chiefly employed in chronic bronchitis. The most useful are carbonate of ammonia, chloride of ammonium, senega, squill, ammoniacum, copaiba, and benzoic acid.

Carbonate of ammonia is invaluable, on account of its being a stimulant to the heart, in the subacute and chronic bronchitis of old people, and in pneumonia when attended with depression, and is often given along with senega. The chloride of ammonium seems at first to increase the amount and lessen the viscidity of the expectoration, and is of most use in the early stage of catarrh of the larger tubes. It is often combined with small doses of tartar emetic.

Squill is one of the most useful expectorants, and may be given in all chronic cases where there is no febrile action, whilst from its diuretic properties it is well fitted for bronchitis attendant upon heart disease. Some persons are very sensitive to its effects, and are apt to be sickened by very small doses.

Ammoniacum is often combined with squill, but is less generally useful. It seems to act most favorably when the expectoration is thin and profuse.

Copaiba, balsam of Peru, and benzoic acid may be given when the expectoration is thick and purulent. The copaiba is apt to lessen the appetite, and often induces nausea and diarrhœa. It is best given in the form of emulsion or in capsules.

The alkalies and their carbonates are often prescribed in chronic bronchitis, especially where it occurs in gouty or rheumatic subjects, and when the secretion is viscid and scanty. On account of their liability to injure the digestion they ought not to be continued for any length of time, but should either be omitted occasionally, or be given in combination with some vegetable tonic.

Sedatives are employed to lessen the violence or frequency of cough. Opium is the most useful of these, and enters, in some form or other, into almost every formula prescribed for this purpose. The more spasmodic the cough and the more it arises from irritation the more beneficial will this drug be found. It must however be employed with great caution in the diseases of children and of old people, when there are signs of failure of the heart, and especially when the expectoration is copious and the breathing difficult, lest the bronchial tubes become overloaded through the diminution of the cough. Where opium is contraindicated, hydrocyanic acid, conium, hyoscyamus, belladonna, or some other sedative, may be employed.

SECTION I.

MORBID STATES NOT NECESSARILY DEPENDENT ON ORGANIC DISEASE.

AN imperfect decarbonization of the blood attends various diseases of the lungs and heart. In order that the respiratory functions should be properly performed it is necessary that the air should have free access to and from the pulmonary vesicles, and that the venous blood should be brought into contact with it in sufficient quantity. If there be a narrowing in the larynx or trachea, as occurs in croup, or if the smaller bronchi be obstructed, as in asthma, or the pulmonary vesicles be blocked up, as in pneumonia and phthisis, there must be an imperfect aëration of the blood. The same effect is produced when the muscles which expand the chest are unable to execute their office, as is seen in certain forms of poisoning and in some diseases of the brain. Where, on the other hand, a free circulation through the lungs is prevented, as in dilated heart or emphysema, the interchange of the gases contained in the blood with the external air is necessarily lessened.

CYANOSIS.

If the arterial blood is imperfectly aërated it retains more or less of the venous colour, and consequently those parts of the body which ordinarily present a rosy hue, as the lips, ears, nose, and ends of the fingers, become dark or blue; this is known by the name of cyanosis. When imperfect aëration of the blood proceeds to such an extent as to cause death, the patient is said to have perished from asphyxia. On post-mortem examination the venous system and the right side of the heart are found overloaded with blood, whilst the left ventricle and auricle contain only a small quantity. In like manner, the pulmonary artery and its branches are overfilled, the pulmonary veins being comparatively empty.

The effects of the circulation of imperfectly decarbonized blood are soon felt throughout the whole system, and the symptoms are urgent in proportion to the rapidity with which it has occurred. A sense of oppression at the chest is experienced, which produces efforts at forced inspiration; the heart beats languidly, and the left ventricle receiving a diminished supply of blood, the pulse becomes feeble, small, and rapid. The mental functions are imperfectly performed, the patient is drowsy, incapable of thought, the sensations are blunted, and a low form of delirium occurs. The muscular efforts are feeble, the temperature falls, the secretions of the various glands become smaller in quantity and deteriorated in quality. The extremities grow cold, the face is covered with perspiration, and, unless relief is afforded, the patient sinks into a state of coma, with or without convulsions. Where venous congestion is long continued and cyanosis is slowly produced, dropsy usually makes its appearance.

The above remarks have reference only to the imperfect decarbonization of the blood that occurs in the progress of disease. They do not apply to the blueness of the skin occasionally seen in children, and also known as cyanosis, which arises from a congenital malformation of the heart or pulmonary artery.

The prognosis of cyanosis is always grave, especially when it has been rapidly developed. You meet, however, with cases of emphysema in which it has been gradually produced, and in which there are no serious symptoms. But in these an attack of bronchitis, which would be productive of but little injury to a healthy person, may quickly produce fatal congestion of the lungs.

Treatment.—This depends, of course, entirely on the cause producing it. When the upper part of the air passages is obstructed an attempt must be made to give relief by means of tracheotomy, or some other means best calculated to effect this object. If the smaller bronchial tubes are occluded with mucus which the patient is unable to expel, a stimulating emetic, such as one of mustard or sulphate of zinc, will be of service. Where the right side of the heart has become rapidly overloaded with blood, either by reason of a constricted mitral valve or acute pulmonary inflammation or congestion, venesection is indicated. The quantity of blood to be drawn need not exceed eight or ten ounces, and the operation may, if desirable, be repeated. But if the cyanosis has come on from a gradual failure of the heart bleeding will add to the mischief, and you must direct your efforts to stimulate the muscular walls to greater exertion by means of alcohol (F. 54), ammonia (F. 49), ether, and digitalis (F. 55).

In all cases place the patient in an upright position, and let him have a free supply of cool air. You may also, by hot bottles to the feet, and mustard poultices or dry cupping to the chest, determine an increased amount of the blood to the surface of the body, and thus help in relieving the pulmonary circulation.

DYSPNŒA.

This may arise from any cause that prevents the due oxidation of the blood. Consequently, it presents itself as a symptom of most of the diseases of the lungs and heart, and its progress and treatment depend upon the condition from which it arises. But it should be also remembered that alterations in the blood are likewise capable of producing difficulty of breathing; thus it is often a prominent symptom in chronic Bright's disease, and relief under such circumstances can only be obtained by directing the treatment so as to relieve the affection of the kidneys.

Anæmia, and especially "idiopathic anæmia," likewise gives rise to it, the number of red blood-corpuscles being insufficient to absorb the necessary amount of oxygen. Here, iron and other measures required to overcome this condition are indicated. There is one form of dyspnœa that is often misunderstood. It is rather a tendency to sighing and an inability to draw a full breath than actual difficulty of breathing. It is caused by distension of the transverse colon preventing the descent of the diaphragm. It is best treated by stimulating aperients, tonics, and careful regulation of the diet.

COUGH.

This is present in most of the diseases of the lungs and air passages. It may be attended with expectoration or it may be dry. In the former case there is some inflammation of the air tubes, but when dry it may be the result of irritation of the throat, pharynx, larynx, or some other part of the organs engaged in respiration. For example, it often comes on during the operation of tapping a pleura distended with fluid, or it may be the earliest sign of pneumonia. You must not look upon cough as a certain indication of lung disease, for irritation in a distant organ may produce it; worms in the intestines, uterine derangements, or dyspepsia, often give rise to it. Disease of the brain in children is not unfrequently preceded by it, and a most distressing form of cough may depend on hysteria alone.

Whenever you have evidence of the existence of disease of the lungs or air passages, you must attempt to relieve the cough by attention to the malady that produces it. You ought to be careful not to prescribe, as is commonly done, sedatives in the early stages of phthisis or other disorders in which it is all-important to maintain the nutrition of the patient, for these remedies are apt to lessen the appetite and deteriorate the digestive powers. Whenever there is very profuse expectoration you must not be too solicitous to lessen the cough, for, by so doing, you run the risk of allowing the mucus to accumulate in the smaller bronchial tubes to a dangerous extent.

Most cases of chronic bronchitis are accompanied by catarrh of the throat, pharynx, or upper part of the larynx; make it a rule, therefore, always to examine these parts before commencing your treatment. I have repeatedly seen persons supposed to be suffering from early phthisis or bronchitis, whose cough depended upon an enlarged uvula, the cough disappearing as soon as the elongation was removed. It is on account of the frequency with which the throat is inflamed, along with the bronchial tubes, that sedative mixtures and lozenges are so useful in bronchitis.

Whenever you meet with cough coming on in paroxysms always carefully examine the throat. If this is normal and there are no signs of hooping-cough, you should search for a source of irritation in other organs. If evidence of worms be discovered you must attempt to remove them; if there be signs of dyspepsia or hepatic congestion direct your attention to the stomach or liver. In cases of hysterical cough bromide of potash (F. 97), along with a sedative inhalation, are the most effectual remedies.

PAINS OF THE CHEST.

Pain referred to the chest is a common subject of complaint, and may arise from very different sources. When situated upon or over the clavicles it may be produced by rheumatism or periostitis, or it may accompany the early stage of phthisis. On the other hand, neuralgic pains in this part are often due to irritation of the gums, set up by decayed teeth.

Pain in the front of the chest is commonly supposed to be a precursor of phthisis, and this is more especially the case when there is also cough and a slight expectoration. Most of these cases are, however, dependent on dyspepsia. The stomach or transverse colon, being distended with flatus, pushes up the diaphragm, and thus causes a painful feeling of constriction. A sense of tightness referred to the front of the chest is a common symptom of acute bronchitis; whilst in another set of cases the uneasiness arises from muscular rheumatism. Whenever pain in this region obstinately resists treatment, carefully examine the ribs and cartilages, for syphilitic periostitis is not uncommon.

Pain at the sides of the chest may originate from rheumatism, dyspepsia, or pleurisy, but it may also be a symptom of disease of the spinal bones or cartilages. In the latter case the pain is usually felt on both sides, although the neuralgia may be more intense on one than the other. You must never neglect to remove the clothing where pain of recent origin is complained of, for a scalding sensation is a common prelude to an attack of herpes zoster, and the discovery of a few spots will clear up the diagnosis at once.

Pain between the shoulders may be due to various morbid conditions. The most common are dyspepsia, from atony of the colon, and irritation produced by gall-stones. It may arise from diseased spine, aortic aneurism, or muscular rheumatism. A cause frequently overlooked is neuralgia connected with spinal irritation. Tenderness on pressure of one of the dorsal spinous processes will generally show you if such is the case.

ASTHMA.

Prognosis.—This may occur as an independent affection, or may be an accompaniment of other diseases, such as emphysema, bronchitis, dilated heart, or chronic Bright's disease. In children it is often associated with eczema of the skin, more especially where there is a hereditary tendency to gout or scrofula. In such cases the asthma frequently subsides at the age of puberty. Where it occurs in adults for the first time the prognosis is much less hopeful. The attacks may, however, sometimes be restrained by proper treatment, and they often disappear when the exciting causes can be avoided. In long-standing cases emphysema is usually present, either as the cause or effect of the asthma.

Treatment during an attack (p. 29).—**A.** The exciting cause has usually been removed before the attack has come on. But occasionally you may discover that the bowels are overloaded, and you then commence your treatment with an aperient; in children a dose of castor oil is suitable, in adults calomel and colocynth (F. 145), or a purgative enema answers best. You must allay the irritation of the bronchial tubes by having the patient placed in a large and well-ventilated room, which in the winter should be properly warmed. When it is associated with bronchitis and the expectoration is viscid and difficult, the air of the room should be saturated with steam; but where the dyspnœa is excessive and the weather warm you more frequently relieve by having the doors and windows kept open.

C. Sedatives and antispasmodics are the chief means at our disposal. In the slighter cases a mixture of morphia, ether, and camphor mixture, with or without lobelia, will suffice to relieve (F. 101). If more severe the tincture of belladonna may be used with bromide of potash (F. 82), or any of the above may be combined, and in heart cases you should add digitalis. Many prefer the subcutaneous injection of morphia in severe attacks, one sixth or one fourth of a grain often giving immediate relief. When it is associated with emphysema or bronchitis, and the expectoration is difficult, the subcutaneous use of atropia (one sixtieth of a grain) is often successful, and may be followed by the ether and lobelia mixture.

In almost every case you will afford relief by inhalations. When the patient is unaccustomed to tobacco a cigar is often sufficient, or the stramonium or datura tatula may be employed. The French "antiasthmatic cigarettes" are still more valuable. Blotting paper soaked in a strong solution of nitre, and afterwards dried and set on fire upon a plate placed near to the patient, seldom fails to lessen the dyspnœa. "Himrod's remedy" sometimes answers when all others fail.

In the employment of all these vapours remember that much of their value depends on the way they are used. The patient should try to inhale the smoke, and when this cannot be done you may enclose him along with the vapour in a closet or a small room.

Some have recommended the application of a solution of ammonia to the pharynx, but this is a very doubtful proceeding, for the dyspnœa in many persons is increased by it.

In all cases observe what remedy seems to afford most relief, so that it may be employed on a recurrence of the attack.

D. Where the dyspnœa is not excessive let the patient remain in bed in the sitting position, well propped up with pillows, so as to allow as free a motion of the chest as possible. In severe cases all the supplementary muscles of respiration are called into play, and you will find it most advantageous to let him sit in front of a low table, with the elbows supported by books or cushions. Many have to spend whole nights in this posture, until the severity of the attack has passed away. The patient usually refuses food, and it is not advisable to press upon him more than is necessary, because any undue distension of the abdominal organs prevents the easy descent of the diaphragm. A cup of hot and strong coffee is commonly useful, and in slight cases often affords immediate relief. In other instances small quantities of gin or whisky are more efficacious.

Treatment for the prevention of asthma (p. 39).—**A**. The first and most essential point is to ascertain if the residence of the patient is unsuitable. Some are free from the attacks in the midst of a crowded city, others only in the open country; one patient will be best at a considerable elevation above the sea; another on low ground; most suffer at the seaside. When the asthma is associated with bronchitis the autumn and spring are the worst periods of the year, when it arises from the general health it is not unusual to find the attacks occur in the middle of summer.

In every case you must ascertain if there is any tendency to rheumatism, scrofula, or gout. In the rheumatic cases you will get the best results from a long-continued course of liquor potassæ, bromide and iodide of potash, with or without vegetable tonics, the state of the skin being, at the same time, carefully attended to. When a scrofulous tendency exists prescribe cod-liver oil, iodide of iron, cinchona, and other such-like tonics, along with a nutritious diet. If gout is hereditary, or if your patient has been a sufferer from it, he will derive most advantage from a course of colchicum, along with magnesia or ammonia, and cinchona (F. 115), the urinary functions being, at the same time, carefully regulated.

F. In every case you will find it of advantage to attend to the digestive organs. Indeed, you will be successful in your treatment in proportion as you can secure the co-operation of the patient in your endeavours to effect this object. As a general rule, you must insist upon as little food being taken as will suffice to maintain health, and a neglect of this precaution will often provoke a severe attack. Most of the attacks occur at night, and it is a useful plan to make the patient dine in the middle of the day, and, unless there be some serious objections to it, let him take animal food only at that time. Stimulants should be avoided.

The action of the bowels must be attended to, and this is so important that few cases progress favorably when it is neglected. The urine should be watched, and if a superabundance of lithic acid be detected appropriate treatment ought to be used.

H. When the digestive and eliminative organs have been regulated it is advisable for you to attempt to improve the nutrition of the nervous centres. If anæmia is a prominent symptom you may use iron, if this is not present you may with greater advantage prescribe zinc (F. 70). A long course of arsenic (F. 105) is indicated when you find an eczematous eruption has existed, or has alternated with the asthma. Where there is undue excitability of the nervous system strychnia (F. 93), with or without iron or quinine, will be found more beneficial.

SECTION II.

ACUTE DISEASES OF THE LUNGS.

PLEURISY.

Prognosis.—Pleurisy occurs under two very different forms; in one it is accompanied by the exudation of lymph only, in the other liquid effusion is also present, which distends the cavity and compresses the lungs. Dry pleurisy is usually the result of some irritation of the lung or neighbouring parts. It may attack the patient only once, or may recur from time to time; it is attended with little or no danger to life, and its duration is usually short. Where liquid effusion occurs there is commonly considerable fever, which may last from ten to twenty days, but the danger depends more on the malady which may have given rise to it than upon the complaint itself. When it is the result of cold there is rarely much risk to life, although the symptoms may be very threatening, unless the patient is old or has undermined his health by indulgence in alcohol, or in case the effusion is very large. Even when acute pleurisy accompanies phthisis, which is not uncommon, it is not necessarily dangerous to life. Where, however, it presents itself in kidney affections or in pyæmia the risk is much greater, and a large number succumb. In fact, whenever pleurisy is secondary the prognosis is grave.

Empyema is often recovered from in the case of children, the matter being absorbed or making its way through one or more of the intercostal spaces. But in adults it is much more apt to end fatally, as the ribs are unable to contract sufficiently to come into contact with the compressed lung after the pus has been evacuated. Chronic pleurisy, whether associated with thickening or fluid exudation, is dangerous, either because it so often arises from phthisis or cancer, or on account of the difficulty with which the walls of the chest become accommodated to the compressed lung.

Treatment (p. 23).—**A.** Where the pleurisy occurs in acute rheumatism, pyæmia, or kidney disease, the primary disorder must be borne in mind, and the treatment modified accordingly. In other cases you have no power to act on the cause of the inflammation.

B. Venesection, which was formerly always used, is now rarely employed. Some practitioners prescribe tartar emetic (F. 59) or aconite (F. 63) whenever the pulse is firm. In all cases the bowels should be freely evacuated. Unless the patient is feeble you will find benefit from the application of leeches; in an adult you may apply six to twelve, and repeat them if necessary. You may also use hot poultices with advantage; they should be reapplied frequently, and be sufficiently large to cover the whole of the affected side. Some have recommended ice externally, but the warmth gives more relief. If the pulse is feeble and compressible, stimulants may be requisite, and this is especially the case in secondary pleurisy and in empyema.

C. As in inflammation of all other serous membranes opium must be your main reliance. It relieves pain, and thereby gives partial rest to the walls of the chest, lessening the irregularity of the breathing You may use it either internally (in doses of one grain three or four times a day) or subcutaneously (one sixth to one quarter of a grain of morphia two or three times a day). In inflammation of the pleura accompanying chronic disease of the kidneys, or where the heart is feeble, opium must be given with caution. Where the patient is young and plethoric you may often observe that it affords only partial relief until leeches have been applied, after which the pain will rapidly subside.

D. In the early stage the patient usually prefers to lie on the opposite side, or on the back, so as to limit the motion of the ribs; but when the effusion is great he rests on the affected side, whereby he lessens the pressure upon the healthy lung. Dr. Roberts applies long straps of sticking plaster round the chest, to afford rest to the inflamed part, and states that it is most useful in the pleuritic attacks so common in phthisis. The objection to the employment of this plan is that it prevents the use of hot poultices and fomentations, which are so valuable in allaying pain. I have, however, found it advantageous in dry pleurisy.

E. The diet should consist of beef tea, milk, and farinaceous food. If there is much depression strong soups, jellies, and alcohol are required.

G. When the fluid shows no sign of disappearing after the inflammation has subsided the question arises as to the best method of removing it. Where the amount is not large you may employ diuretics, such as the acetate or citrate of potash (F. 166), with or without digitalis, or you may prescribe the iodide of potash (F. 113), at the same time applying frequent small blisters over the affected side. You will find it more useful to employ the blistering in this way than to keep up a constant discharge, by means of stimulating ointments. When you have reason to suspect thickening of the pleura, or where the exudation has existed for some length of time, the application of iodine is more useful than blisters.

Instead of trusting to diuretics and blisters you should tap the chest under the following conditions:—1. If the effusion has lasted above a month without showing signs of absorption. 2. If the difficulty of breathing is intense, or seems to be increasing quickly. 3. If you have reason to suspect that the fluid in the pleura is purulent. 4. In all cases of double pleurisy with effusion. Under all these circumstances you are called upon to relieve the patient by the use of the aspirator. It is not, however, necessary to remove all the fluid at once, for the withdrawal of eight or ten ounces will usually give immediate relief. It is advisable, when you have any doubts as to the correctness of your diagnosis, to employ an exploring needle or fine syringe before you use the trocar.

Dr. Bowditch recommends the site of the puncture should be thus selected:—"Find the inferior limit of the sound lung behind, and tap two inches higher than this on the pleuritic side, at a point in a line let fall perpendicularly from the angle of the scapula. Push in the intercostal space here with the point of the finger, and plunge the trocar quickly in at the depressed part; be sure to puncture rapidly and to a sufficient depth, or you may be baulked by the false membranes occluding the canula."

Although it is rare for any ill effect to follow the use of the aspirator, this sometimes takes place. Spasmodic cough occurs in some cases, and if the breathing becomes much affected it will be advisable for you to stop the flow of the liquid for a few minutes, or, in extreme cases, to defer the emptying of the cavity till another time. The subcutaneous injection of morphia will generally stop the cough. In chronic cases great pain is sometimes experienced from the stretching of the false membranes, and under such circumstances you must stop the operation, and be content to draw off the fluid at two or three times, so as to permit of the more gradual expansion of the lung.

In empyema occurring in adults, tapping is generally ineffectual; you must therefore treat the case as one of abscess, and insert a drainage tube into the pleura. When, as not unfrequently happens, the secretion of pus continues, you are advised to wash out the chest every day with a solution of iodine, allowing it to escape as soon as the injection is finished. If the fluid is fetid you can best correct it by injections of the permanganate of potash or of carbolic acid and the application of a charcoal poultice to the wound. In empyema, as in all other cases of suppuration, you aim at supporting the strength of the patient. Thus, you give quinine (F. 32) or iron, or both combined (F. 37). If there be any contraindication to these you may prescribe acids and bitter infusions, such as calumba or cinchona (F. 24). A liberal diet must be allowed, and if the patient be unable to take solid food you may prescribe strong soups, jellies, beef tea, &c. A moderate amount of wine is also necessary, or, if the patient be young, you may use malt liquors with advantage.

PNEUMOTHORAX.

Prognosis.—As this accident most frequently takes place in phthisical subjects from the rupture of a cavity, the prognosis is unfavorable. It is especially so during the first day or two, but if the shock be surmounted improvement may take place, and the patient's life may be preserved for many months. A few recover, or, at any rate, all urgent symptoms disappear. The most favorable cases are those where it occurs from an empyema discharging itself through the lung, or from the bursting of an air-cell in emphysema.

Treatment.—If you see the patient shortly after the accident, when the dyspnœa is severe and the pain excessive, you must give as much rest to the lung as possible. In most cases he prefers to sit upright; others lie with the head inclined forwards; but in any case it is best to let him maintain the posture he feels to be most easy.

Where the symptoms are of moderate intensity you may order a mustard poultice, or turpentine fomentations to the chest, so as to increase the circulation through the skin. Some practitioners prefer dry cupping or the application of a large blister. If the pain is severe you may prescribe opium by the mouth, with or without antispasmodics, such as ether (F. 71), lobelia (F. 72), or chloroform; or you may inject subcutaneously one quarter of a grain of morphia, but it will be necessary to repeat the sedative every two or three hours until relief is obtained. Where the dyspnœa is extreme and the patient is plethoric, many prescribe venesection, so as to reduce the quantity of blood that has to be transmitted through the uncompressed lung.

Since the introduction of the aspirator, venesection has been rarely employed. It has been more generally advised to evacuate the air by tapping the chest, although, of course, in most cases the operation will have to be repeated from time to time. The trocar should be introduced between the fourth and fifth ribs outside of the nipple line. Do not remove the trocar if cough comes on until this ceases; the irritation producing the cough is best relieved by the subcutaneous injection of morphia. In most cases it is requisite to act pretty briskly on the bowels, so as to lessen the amount of the circulating fluid, unless diarrhœa is present. Where the pneumothorax has arisen from empyema a drainage tube should be introduced without delay.

If there is much depression, as occurs where the accident takes place in those who have long suffered from phthisis, you should keep up the action of the heart by brandy, ammonia, or ether, and carefully avoid any circumstance likely to reduce the patient's strength.

ACUTE BRONCHITIS.

Prognosis.—When the larger tubes are alone affected there is no danger to persons who are otherwise in good health. The symptoms generally lessen in severity as soon as the expectoration becomes loose, and the complaint ordinarily subsides in two or three weeks. When the patient has previously suffered from chronic bronchitis an acute or subacute form of the complaint often occurs as a prelude to its recurrence. Where a young person has frequent attacks of acute bronchitis always examine the chest carefully, lest there should be tubercular disease in the lungs.

The prognosis of acute capillary bronchitis is always grave. In adults it is often associated with emphysema, phthisis, heart disease, contracting kidneys, or some other serious chronic disorder, and under such circumstances it often proves fatal. In children it may follow catarrh of the larger tubes, and often produces death, by causing collapse of portions of the lungs. Whenever a child is affected with bronchitis you ought to visit it frequently, and watch the progress of the malady closely, as the signs of collapse not unfrequently occur suddenly.

Treatment (p. 23).—**A**. In adults, examine for signs of phthisis, emphysema, heart disease, chronic disease of the kidneys, and if any of these be present modify your treatment accordingly. For example, in dilatation of the heart you will most likely require to prescribe digitalis; in diseased kidneys active purgatives. In children, examine the teeth and the alvine evacuations; if the teeth are projecting lance the gums; if the stools seem to be disordered or the bowels confined prescribe a dose of calomel. If the symptoms are at all threatening or severe, maintain the room at an even temperature (65° to 68°), and encourage secretion from the mucous membrane, by filling it with steam.

B. Your remedies will require to be varied according to the age of the patient and the part of the bronchial membrane inflamed. In adults, where the larger tubes are alone affected, you may prescribe small doses of tartar emetic (F. 180), or ipecacuanha (F. 179), in combination with diaphoretics, until expectoration takes place freely. When the symptoms are only slight the chloride of ammonium (F. 183), with or without tartar emetic, is valuable. In the case of children you employ tartar emetic only in small doses, as it is apt to irritate; generally ipecacuanha is more useful (F. 178). Where much soreness is complained of you should order a linseed or mustard poultice, or, in case of adults, an opiate liniment may be rubbed on the chest. Be careful not to use opiate liniments to children, but trust to poultices or stimulating embrocations.

In capillary bronchitis, even in adults, you rarely employ tartar emetic, on account of the tendency to depression. You may, however, use dry cupping to the chest with advantage. Mostly you require stimulants, such as carbonate of ammonia (F. 50), ether, and infusion of senega (F. 187), along with small, but repeated doses of alcohol. Many practitioners have advocated the employment of leeches, followed by poultices, in children affected with capillary bronchitis. The objection to this is that the loss of blood is apt to enfeeble the child, and so predispose it to pulmonary collapse. You will find ipecacuanha, with an occasional emetic, more efficacious whenever the secretion is excessive or difficult to expel.

When the larger tubes are alone inflamed you should change the treatment as soon as the secretion becomes loose and copious. Small doses of the compound tincture of camphor, with squills and senega or cascarilla (F. 185), form the most appropriate treatment.

C. In bronchitis of the larger tubes in adults a sedative draught of chloral (F. 98), or compound ipecacuanha powder, may be given at bedtime to procure rest. Where there is capillary bronchitis, opiates should be used with great caution; they ought not to be employed where the secretion is excessive or where there is much dyspnœa.

D. When the case is a slight one it is sufficient that the patient should remain in his room, but if the symptoms be severe he must be confined to bed.

E. As in all other inflammations, the diet should consist of liquids, the material being adapted to the general condition of the patient.

ACUTE LOBAR PNEUMONIA.

Prognosis.—This varies greatly in different cases, as the disease occurs along with two opposite conditions of the system. The sthenic, which is the more common form, is associated with a tolerably firm but small pulse, high temperature, troublesome cough, and glutinous or bloody expectoration; whilst asthenic pneumonia is more frequently developed during the course of some other illness, and is accompanied by a feeble, compressible pulse, lower temperature, less troublesome cough, deficient expectoration, dry tongue, and sordes on the lips and teeth. Sthenic pneumonia generally ends favorably, by a sudden crisis, on the seventh or ninth day, the temperature often falling many degrees within twelve hours, and all the symptoms being at the same time mitigated. Asthenic pneumonia, on the contrary, usually shows no distinct crisis, and the prognosis is, as a rule, unfavorable. Both forms are apt to end badly in drunkards and in persons suffering from kidney disease. The chances of death increase also in proportion to the age of the individual. Very rapid breathing and a comparatively low temperature are unfavorable signs. Delirium in adults and convulsions in children indicate danger. When both lungs are inflamed, which is almost always associated with some constitutional disease, the danger to life is great. Pneumonia attacking phthisical persons is not necessarily more dangerous than under other circumstances, but it is not unfrequently ushered in with profuse hæmoptysis.

Treatment (p. 23).—As the disease may occur under such entirely different conditions the treatment must vary in a corresponding degree.

B. In the sthenic form general and local bleeding used to be always recommended, indeed, it was one of the diseases in which such a method of treatment was looked upon as sure to be beneficial. Of late years we have been, perhaps, too much in the habit of neglecting bloodletting, chiefly, perhaps, because the mortality in an uncomplicated case is small and the relief at the crisis is so complete. In country practice, however, and in strong plethoric persons, venesection is often very beneficial, in preventing or removing dangerous congestion of the unaffected lung. Niemeyer lays down the following judicious rules for its employment:

"1st. When the pneumonia has attacked a vigorous and hitherto healthy subject, is of recent occurrence, the temperature being higher than 105°, and the frequence of the pulse rating at more than 120 beats a minute. Here danger threatens from the violence of the fever, and free venesection will reduce the temperature and lessen the frequence of the pulse. In those who are already debilitated and anæmic bleeding increases the danger of exhaustion. Should the fever be moderate bloodletting is not indicated, even in healthy and vigorous individuals.

"2nd. When collateral œdema in the portions of the lung unaffected by pneumonia is causing danger to life, the pressure of the blood is reduced by bleeding; and by prevention of further transudation of serum into the vesicles, insufficience of the lung and carbonic-acid poisoning are averted. Wherever the great frequence of respiration in the commencement of a pneumonia cannot be traced to fever, pain, and to the extent of the pneumonic process alone, as soon as a serous foamy expectoration appears, together with a respiration of forty or fifty breaths a minute, and when the rattle in the chest does not cease for a while after the patient has coughed, we ought at once to practise a copious venesection, in order to reduce the mass of blood and to modify the collateral pressure.

"The third indication for bleeding arises upon the appearance of symptoms of pressure upon the brain, not headache and delirium, but a state of stupor or transient paralysis."

Where the expectoration is very hard and difficult frequent doses of tartar emetic, along with some saline (F. 58), will be found useful. Do not attempt to allay the cough by opium, as this tends to lessen the amount of the expectoration. When the pulse is unusually rapid you may use digitalis in moderate doses. Some prefer aconite (F. 63) or veratrum for this purpose, but the action of the latter should be carefully watched, as it sometimes produces great depression.

Where there is severe pain and you find no necessity for venesection, the application of leeches to the side often affords immediate relief. Hot poultices should in all cases be used and frequently repeated. In Germany cloths wrung out of cold water have been generally prescribed, but in this country the application of heat is preferred.

In the asthenic form, which may be present from the first, or may show itself a few days after the commencement of the illness, you must carefully avoid all depressing treatment. On the contrary, you prescribe carbonate of ammonia with infusion of senega (F. 187), or quinine (F. 52), or decoction of cinchona (F. 50), whilst you maintain the strength of the patient with beef tea, soups, and alcoholic stimulants. In either form, as soon as the more active symptoms have subsided, you will require to support the strength of the patient by acids, quinine, or other tonics (F. 37), and a nutritious diet.

C. You seldom have occasion to use sedatives, excepting in certain asthenic cases, where the patient's strength seems to fail from want of sleep.

D. It is almost unnecessary to say that the patient should be kept in bed and prevented talking. He may be allowed to choose his own position.

E. The diet should consist of liquid food, and he may be allowed to drink as freely as his thirst prompts him to do.

Where you have reason to believe that gangrene of the lung has taken place you must attempt to keep up the patient's strength with ammonia and cinchona (F. 50), quinine (F. 52), or some other tonic. Inhalations of carbolic acid, creasote, or turpentine, are of great service in correcting the fœtor, and a free supply of wine must be allowed. Some recommend turpentine internally (F. 6) as a stimulant for this class of cases.

CATARRHAL PNEUMONIA.

Prognosis.—Besides the ordinary lobar pneumonia we often encounter another kind of acute inflammation of the lungs. This, which is comparatively rare in middle life, is common in young children. It generally results from an extension of inflammation from the capillary bronchial tubes to the air vesicles, or it attacks portions of a lung that have become collapsed. It is most commonly met with after measles or hooping-cough, more rarely it is a consequence of diphtheria, smallpox, scarlatina, or typhoid fever. It is apt to follow bronchitis when this has affected children suffering from rickets, tuberculosis, or other constitutional diseases. The prognosis is much more grave than that of lobar pneumonia, 50 per cent. of those attacked succumbing to the disease. It is most fatal to children under one year of age, and the danger decreases in proportion as the patient approaches puberty. The duration of the acute stage is usually from ten to fourteen days; there is no marked crisis as in lobar pneumonia, convalescence, in cases of recovery, is always tedious, and relapses are common.

Treatment (p. 23).—**B.** The older writers recommended leeches, but there is the same objection to any depressing treatment as in capillary bronchitis, of which the pneumonia is usually but an extension, viz. the fear of diminishing the power of inspiration, and thus inducing collapse of the pulmonary tissue. In adults you will generally require to give carbonate of ammonia, with or without senega (F. 187), or bark, and to repeat the dose frequently. In most cases alcohol is required; in young children you should begin with a small quantity, say five or ten drops, of brandy every three hours in milk, and increase the amount if the effect seems to be beneficial. In all cases you stimulate the skin of the chest by poultices, with or without mustard sprinkled over them. When the powers of inspiration seem to flag you should employ frictions with stimulating liniments to the chest, such as the ammonia, or the acetic acid and turpentine liniment. As the skin of young children is very tender these should be mixed with oil.

C. Never prescribe opium. Instead of trying to soothe the cough you should regard it as useful for clearing away the mucus that obstructs the tubes. The chance of recovery, in fact, depends on maintaining the power of the respiratory muscles.

G. The removal of the mucus from the bronchial tubes is a matter of primary importance, and, if you observe them becoming choked, and the breathing rapid and shallow, you must give emetics. Ipecacuanha is usually employed, in doses of one eighth to one quarter of a grain for a child one year old, repeated, if necessary, two or three times a day. Of late apomorphia has been strongly recommended in Germany, inasmuch as it excites vomiting without nausea, and without much depression of the heart. It is best to use it hypodermically. Others prescribe senega as a stimulating expectorant, along with ammonia and ipecacuanha (F. 188).

SECTION III.

CHRONIC DISEASES OF THE LUNGS.

HYDROTHORAX.

Prognosis.—This depends upon the nature and gravity of the disease of the heart or kidneys, from which hydrothorax usually arises. The fluid is present in both sides of the chest unless one pleura is obliterated by adhesions. Although only part of a general dropsy, it adds greatly to the danger of the patient, by compressing the lungs and thus increasing the difficulty of the pulmonary circulation. It is always a bad omen, and should be viewed as an unfavorable sign whenever it makes its appearance.

Treatment (p. 35).—**A.** The treatment must be secondary to that of the complaint which has produced it, but generally requires to be energetic.

F. The question not unfrequently arises, whether you can by local measures assist in the removal of the fluid from the pleuræ. Blisters are in most cases employed, excepting when the kidneys are acutely inflamed, when it is better to trust to the application of iodine or croton oil than risk an increase of the nephritis from the absorption of the cantharides. Where the dyspnœa is severe, you must employ the aspirator to give relief. Remember that in chronic disease of the kidneys any operation, however slight, may set up dangerous inflammation of the part wounded, and that in other cases the fluid quickly collects again.

CHRONIC BRONCHITIS.

Prognosis.—This is, when uncomplicated, rarely fatal, although, from its being so often an accompaniment or consequence of disease of the heart, lungs, or kidneys, it is often the immediate cause of death. It is apt to occur in persons of middle or advanced age every year, at first appearing only during the cold and damp weather of autumn and spring, but afterwards being constantly present. The symptoms are, however, always aggravated by atmospheric changes. When habitual it is seldom cured, but persists, in a greater or less degree, during the whole life of the patient.

Plastic bronchitis is very obstinate, often lasting for many years, and at last subsiding of itself without any apparent reason. It usually occurs in early or middle life, rarely, if ever, in old age. Although the symptoms are often very severe, death is a rare termination.

Dilated bronchial tubes are most common in childhood, and persons affected with them may live for many years. The symptoms are very similar to those of chronic phthisis, with which, indeed, the complaint is often confounded. The patient may either die of exhaustion, or he may be cut off by an attack of acute bronchitis.

Treatment (p. 32).—There are few diseases so common and whose treatment is so unsatisfactory as chronic bronchitis. The failure in treatment arises from the frequency with which it is only an accompaniment of other and more serious morbid changes, from its being apt to occur in those whose vital powers are enfeebled by age, and also because we are often unable to remove the circumstances that tend to maintain it.

A. The most important point is to obviate anything producing or keeping up the morbid action. Amongst the poor a dusty occupation will often render all treatment useless, as air loaded with irritating particles is constantly being passed through the inflamed tubes.

Millers, ropemakers, stonemasons, and persons engaged in like occupations, are especially liable to the disease. They may be tolerably well during the summer, but as soon as the mucous membrane becomes irritated by the cold and damp atmosphere the dust in the rooms in which they work sets up inflammation. A damp climate is in other cases the exciting cause, and the patient can only overcome the complaint by changing his residence. Rheumatism, gout, and syphilis, are very common sources of chronic bronchitis. Wherever you have reason to suspect these conditions you must direct your treatment accordingly. In every case examine the throat. The uvula, tonsils, and larynx are generally in a state of chronic catarrh, and local applications to these parts will often at once alleviate the symptoms.

F. Watch carefully the nutrition of the patient. If his appetite flags you may prescribe quinine (F. 32), cascarilla (F. 26), or some other bitter; if anæmia is present use iron (F. 38). Cod-liver oil is as valuable as in phthisis, and is especially of use where the expectoration is profuse. Always examine the urine before commencing your treatment, as chronic atrophy of the kidneys often first shows itself by an attack of bronchitis. Where there is no albumen see that the excretion of urine is sufficient in quantity and that it is not loaded with lithic acid.

G. Where you can find no indication for treatment, either in removing the causes of the complaint, or in the defective nutrition of the patient, you must content yourself with relieving the symptoms, and more especially the cough. You will find the character of the expectoration your best guide.

1. When the expectoration is scanty and difficult of expulsion alkalies (F. 208, 211) are most useful, and with them you may combine ipecacuanha or squills as expectorants. If there be a tendency to rheumatism you may also add iodide of potash. When the

cough is severe use bromide of potash, hyoscyamus or conium, but do not give opium, as this tends to lessen secretion. Carbonate of ammonia is most useful in old persons and where the heart is feeble. When the larynx and trachea are at the same time affected, the inhalation of conium is of great value. With this tough and scanty mucus there is frequently also a tendency to asthma, and then you may combine with the alkalies bromide of potash, belladonna, ether, or chloroform. Poultices and stimulating frictions should be used externally.

2. If the expectoration is free and muco-purulent, opium, in all its various preparations, is invaluable (F. 185). The stimulating gums, such as benzoin, copaiba, and cubebs, are also of use. Externally blisters and croton oil liniments may be applied, especially where the smaller tubes are affected.

3. Where the expectoration is very profuse and watery, nothing is equal to ammoniacum (F 189), with or without squills.

4. The more nearly the expectoration approaches in appearance to pus the more useful are tonics. You may use iron, quinine, strychnia, and especially cod-liver oil. If the expectoration is excessive and loose and there be no great dyspnœa, astringents may be cautiously tried, but they should be abandoned in case the dyspnœa increases. The best of these are gallic acid (F. 1), acetate of lead (F. 14), the tincture of larch, and small doses of turpentine (F. 6).

5. In plastic bronchitis, the iodide and bromide of potash, along with cod-liver oil, are of service. We are advised by some foreign practitioners to employ lime water, lactic acid, and the alkaline carbonates, in the form of spray, but I cannot speak of them from my own experience. A sea voyage has in some cases succeeded when all medicines have failed.

6. The treatment of fetid bronchitis is the same as that required for gangrene of the lung (p. 108).

EMPHYSEMA OF THE LUNGS.

Prognosis.—This is essentially a chronic disorder, often lasting for many years, and although it causes great distress it rarely of itself proves fatal. It produces a tendency to asthma, chronic bronchitis, acute capillary bronchitis, and dilatation of the heart, and, in this way, is a common cause of death. When emphysema has existed for some time, it is seldom cured, although you may give great relief, by reducing the coexisting inflammation of the bronchial tubes.

Treatment.—So long as the patient is free from bronchitis there is not much necessity for medical treatment. The digestive process is ordinarily deranged, on account of the pulmonary and hepatic circulations being obstructed, and thereby producing chronic gastric catarrh. An occasional dose of blue pill, followed by alkalies, will under such circumstances afford great relief.

The patient must endeavour to ward off attacks of bronchitis, by avoiding all exposure to night air, cold, and damp. When he is attacked by asthma, acute capillary bronchitis, chronic bronchitis, or dilated heart, the treatment must be conducted on the principles recommended for these diseases. As a general rule, you require to bear in mind that a part of the pulmonary circulation is destroyed, and that therefore the organs which, like the kidneys and skin, eliminate water, must be maintained in active operation by the use of diuretics and sudorifics.

PHTHISIS.

Prognosis.—This varies very greatly, some patients dying in three or four months, others living for many years.

Age exercises a marked influence on the duration of the disease, those above fifty being much more liable to chronic phthisis than younger individuals. Where the complaint follows bronchitis of long standing the progress is usually slow, whilst many of the most rapid cases occur in persons who have previously enjoyed excellent health. When an hereditary predisposition is strongly marked there is generally a greater tendency to rapid phthisis than in others. The higher the temperature and the longer it is sustained, the more quickly the destruction of the lungs and the loss of flesh proceed, the more certainly may you look for a rapid termination. The early supervention of night sweats or of intractable diarrhœa are bad signs, whilst a constipated state of the bowels is a favorable indication. Early hæmoptysis, if it is not accompanied nor followed by a high temperature, is not necessarily a bad sign; on the contrary, many cases of this description make slow progress. Œdema of the legs, aphthæ of the mouth, or severe diarrhœa, tend to show the case is approaching to its close.

Treatment.—**A.** You should, in all cases, teach the patient to avoid whatever is likely to quicken the progress of the disease. For example, he should never expose himself to damp, cold, night air, or any other circumstance apt to provoke bronchitis. His general health must be strictly watched, and everything tending to diminish his vital powers should be guarded against. Where he is able to do it, nothing is so valuable as spending the winter months in a warm and dry atmosphere, so long as the disease is in a chronic state or at an early stage. But if there is much fever, or the disease is far advanced, great injury is often done by travelling and by the loss of home comforts necessitated by a foreign residence. Where the patient has suffered from syphilis iodide of potash is invaluable.

F. The main principle in every case of phthisis is to improve the general health so as to favour the tubercular formation becoming walled in by fibrous tissue.

The diet is of the first importance, and every effort should be used to induce the patient to take articles of a fatty nature. Cod-liver oil is the best of these, and may be given along with acids, or in orange or ginger wine. Where it cannot be borne during the day, it is often digested when taken at bedtime; in other cases an emulsion of it with liquor potassæ answers well. The extract of malt is a good substitute for the oil, and rum and milk, taken early in the morning, seem also to promote the production of fat. Gelatinous materials, such as oysters and Iceland moss, are valuable, and may be used at any stage of the disease. Starchy food can be often assimilated where there is an objection to fat, and cornflour, rice, sago, and arrowroot may be freely given. As a general rule, alcoholic stimulants agree and are very useful, especially in the later stages, all excess being of course forbidden. A liberal supply of animal food should be afforded, both to improve the nutrition, and also to compensate for the loss of albumen caused by the expectoration.

In all cases you should watch and regulate the digestive organs. Do not, however, imagine that the mere prescribing of tonics is enough, as you will constantly find they disagree, on account of the presence of chronic gastric catarrh. This must be first removed, and then they may be given with advantage. Every now and then, you will have to omit them for a time, and direct your attention to the disordered state of the stomach.

The mineral acids are the most useful tonics, and may be combined with light bitters, such as gentian or calumba. If the appetite is very bad and the strength much reduced, you may give quinine or bark. When there is much anæmia iron or zinc is required, but iron is unsuitable where there is a tendency to frequent hæmoptysis. Take care to regulate the bowels at the same time, for, unless this is attended to, few tonics will agree.

H. You should avoid everything likely to reduce the strength of the patient. Unless, therefore, it is absolutely requisite never order leeches. In the second stage, the frequent repetition of small blisters below the clavicles is of great value in relieving the cough and promoting expectoration. Where there is much thickening of the pleura, the application of iodine is more useful. Issues and setons used to be employed, but they are not of sufficient value to compensate for the weakness and discomfort they produce.

Cough is the symptom to which you are always expected to pay especial attention. Do not use opiates more freely than you can help, as they tend to lessen the appetite and thereby impair the nutrition of the patient. It is a good plan to give some mild sedative, such as chloral (F. 98) or the compound ipecacuanha powder (F. 80) at night, so that the patient may have sufficient sleep, and to trust to small blisters and other forms of counter-irritation to allay the cough in the daytime. In the later stages morphia and other sedatives are necessary to afford the patient relief from his sufferings. The chief complications are hæmoptysis, bronchitis, pleurisy, diarrhœa, night sweats, and aphthæ.

HÆMOPTYSIS.

Prognosis.—Spitting of blood may arise from hemorrhage occurring in various parts of the mucous membrane of the mouth or throat. You must, therefore, ascertain if it has originated in the gums, pharynx, or posterior nares. It may, again, be the result of an aneurism, or the blood may have come from the stomach. The question as to aneurism you will have to settle by physical examination, after the hemorrhage has been subdued.

In hæmoptysis the danger is in proportion to the amount of blood lost, the persistence of the bleeding, and the previous state of the patient's health. A fatal termination in a first attack is rare; this is more apt to occur where there has been long-standing fibroid phthisis. In such instances the bleeding often takes place from a small aneurism of the pulmonary artery projecting into the wall of a cavity.

Treatment (p. 26).—B. Ice is the best astringent. Small pieces may be allowed to melt in the mouth, or may be swallowed from time to time, and when the hemorrhage is severe an ice-bag placed upon the chest is very efficacious. In slight cases a mixture of sulphate of magnesia, digitalis, and infusion of roses, will be sufficient, but where the hemorrhage is to a great extent, you must use stronger astringents. Thus, you may inject subcutaneously one or two grains of ergotine. The disadvantage of using ergot subcutaneously is that sometimes inflammation is set up around the puncture, which may be followed by suppuration, but this is not so apt to occur if gelatine discs are employed. You may also give internally gallic acid (F. 1), the acetate of lead (F. 14), or ergot, along with small doses of opium.

There is a form of hæmoptysis in which, in spite of astringents, the bleeding persists for weeks, although not to any great extent; under such circumstances the tincture of perchloride of iron (F. 36), or the pernitrate of iron, is of great use. When the case has been very obstinate, an emetic of sulphate of zinc has sometimes effectually put a stop to it. Do not use alcohol unnecessarily in hæmoptysis, for you must bear in mind that fainting is a natural method of arresting hemorrhage. In bad cases, however, you must give brandy by the mouth, by the rectum, or subcutaneously.

When the tendency to recurrence of the bleeding is strongly marked, you must teach your patient to avoid all severe exercise. Forbid him to run or climb hills, or, in fact, to use any excessive exertion. Let him eat and drink sparingly, and let all his food be taken rather cold. He should avoid alcoholic liquors, and do not prescribe cod-liver oil, as it often seems to induce a return of the bleeding. If mineral tonics are necessary, you will find preparations of zinc preferable to those of iron.

D. Perfect rest is of course a most essential matter during the attack. Place the patient in a sitting posture, so that he may more readily clear the bronchial tubes of the accumulated blood. Forbid him to talk and let him breathe with as little extra exertion as possible. The air of the room should be cool, and, if necessary, the doors and windows may be kept open. Maintain a cheerful face, for hæmoptysis is an alarming accident, and you are sure to do harm by gloomy or anxious looks.

Profuse perspirations are constantly observed in phthisis. They may be present before any other marked symptom of the disease has shown itself, or, what is more general, they only attract attention when the tubercular matter has begun to soften. They may take place at any hour, but are usually most severe when the patient awakes from sleep, at two or three o'clock in the morning. Various measures have been recommended to remove or lessen them. Some advise sponging with vinegar and water or dilute mineral acids, before the patient retires to rest; others that he should take a light meal, along with some port wine, shortly before bedtime. Acids, such as the phosphoric, nitrohydrochloric, or the infusion of roses, or bark, quinine, or other tonics may be tried. The oxide of zinc (F. 16), which is one of the most useful remedies for this symptom, may be given along with conium and hyoscyamus. You will also often find the subcutaneous injection of atropia (one sixtieth to one eightieth of a grain each night) allay the excessive perspiration, while it helps to relieve the cough.

CHAPTER VII.

DISEASES OF THE MOUTH AND THROAT.

ALTHOUGH most of the diseases of the oral cavity are unattended with danger to life, yet the appearances presented by its mucous membrane are most valuable, as indicating the state of the more important parts of the digestive tube. The surface of the tongue is, like all other mucous membranes, liable to erythematous and catarrhal inflammation. In the former it is red and smooth, as you may observe in scarlatina; in the latter there is an increased formation of epithelial cells, and this gives to the tongue a thick, white coating, known as a "furred or foul tongue." As it is, however, merely the result of inflammation it is not a necessary sign of disorder of the stomach, although it is a constant accompaniment of gastric catarrh. Any inflammation of the oral cavity, such as that produced by an inflamed tonsil, a decayed tooth, or even by tobacco-smoking, may produce it. The colour of the tongue varies according to its cause. When yellow, it is ordinarily the result of the inspissation of saliva containing bile, a condition not unfrequent in congestion of the liver and other hepatic disorders. A dark brown or black colour generally indicates an altered state of the blood, and often results from fevers of a typhoid type.

As the greater part of the tongue is composed of muscles, its tone varies according to the condition of the other parts of the muscular system of the body, and especially with that of the middle coat of the digestive tube. Thus, when the patient is weak the tongue is usually flabby and soft; in acute gastritis it is sharp and pointed; in chronic gastritis and in atonic dyspepsia a flat and indented margin points to a slow and feeble motion of the other parts of the alimentary canal. It is by thus watching the appearances presented by the mucous membrane and the muscular structure of the only exposed part of the digestive tract, that the physician is able to surmise the condition of the other portions which are hidden from his view.

SECTION I.

CONDITIONS NOT NECESSARILY DEPENDENT ON ORGANIC DISEASE.

THRUSH.

THE mouth is liable to parasitic growths on its surface, which are known by the name of "thrush." The complaint is most common in the earlier months of childhood, and is especially liable to attack those children who have been brought up by hand. It occurs also during any exhausting illness, such as phthisis and cancer. It usually first makes its appearance on the inner surface of the lips, angles of the mouth, and the top and sides of the tongue. When a portion of the curd-like material is examined with the microscope, it is seen to be formed of the cells and jointed fibres of a fungus termed the *Oidium albicans*.

The circumstances tending to produce thrush are—1. An acid state of the saliva. 2. A feeble movement of the tongue, lips, and cheeks, whereby particles of food are allowed to remain in the mouth. 3. Some catarrhal affection of the mouth, which is not only a result of the disease, but also may be a predisposing cause of it.

There is no danger from thrush itself, but it indicates a very feeble state of the system, and is, therefore, in many chronic complaints a prelude to a fatal termination. It likewise tends to hasten the death of the patient, by rendering him unwilling to take food, on account of the pain that accompanies mastication and swallowing.

Treatment.—Perfect cleanliness is the most important point, both in the prevention and cure of the affection. The mouth should be well washed out, directly after feeding, with a piece of rag moistened with a solution of borax or chlorate of potash. All the materials in which the food is contained, in the case of a child brought up by hand, should be kept scrupulously clean, and should be often changed. This is especially necessary where india-rubber tubes are used. When the child is at the breast, care must be taken not to let it sleep with the nipple in its mouth, as, in this way, a portion of the milk is often allowed to remain in the oral cavity during the night.

SECTION II.

ACUTE DISEASES OF THE MOUTH AND THROAT.

ORAL CATARRH.

Prognosis.—This may present itself either as an acute or chronic condition. It is devoid of danger to life, although it may give rise to considerable pain and inconvenience in mastication and speaking.

Treatment (p. 23).—**A.** The causes of the complaint are numerous, and the most important part of the treatment consists in their removal. In children it may be often relieved by lancing a projecting tooth; in adults, by the removal of tartar, or by the filing of a sharp projecting edge of a tooth. You must carefully ascertain the habits of your patient. Often an undue amount of stimulants, or of tobacco, keeps up the complaint, and as soon as the injurious habit is abandoned the inflammation ceases without further trouble. In other cases it is a sign of dyspepsia, and the treatment of the gastric disorder is all that is necessary. Not unfrequently it is the result of syphilis, and then appropriate remedies, such as mercury or iodine, are required.

B. You will find it an advantage where the inflammation is acute, to use a solution of chlorate of potash (F. 197) or borax (F. 198), as a gargle. In the more chronic cases you may have recourse to the application of nitrate of silver in solution (F. 201), or, where ulcerations are present, to chloride of zinc or perchloride of mercury.

D. You should direct your patient to avoid, as far as possible, food requiring much mastication, as well as all stimulants and condiments. In severe cases you ought to confine him to a liquid diet, such as soups, beef tea, and farinaceous food. Unless necessary on account of syphilis, you should not prescribe mercury or iodine, as these have a tendency to produce oral catarrh.

APHTHÆ.

This used formerly to be confounded with thrush, but microscopic researches have proved the latter to be a parasitic disease, whilst aphthæ are due to inflammation and ulceration of the follicles of the mouth. It is most frequently observed in childhood, during the period of teething, and is rare after five years of age. The prognosis is favorable, as far as the local affection is concerned.

Treatment (p. 23).—**A.** Carefully examine the child's gums, and if any teeth are projecting use your lancet. In other cases the cause seems to arise from disorder of the digestive organs which should be treated by soda and rhubarb, or occasional doses of castor oil. Chlorate of potash appears to remove some condition of the system that produces the complaint. You may give it in divided doses, up to twenty or thirty grains daily.

B. You attempt to improve the local circulation in recent cases by means of a gargle of borax or chlorate of potash (F. 197). When the disease is of longer standing you may stimulate the mucous membrane by applying a solution of nitrate of silver.

ULCERATIVE STOMATITIS.

Prognosis.—Notwithstanding the threatening appearance of many of these cases, recovery generally occurs.

Treatment (p. 23).—**A.** If the bowels are constipated they should be relieved by suitable aperients, but you had better avoid calomel and all other depressing purgatives. Chlorate of potash is believed by many to exercise a specific influence upon the complaint, that is, it seems to remove some obstruction to the healing process. It may be given in three or four grain doses every three hours.

B. In recent cases you lessen vascular action by the use of a lotion of borax, but if the case is of a more chronic character a solution of nitrate of silver (five grains to the ounce) will be found more suitable.

GANGRENOUS STOMATITIS OR NOMA.

Prognosis.—This is exceedingly unfavorable, very few patients recovering. It scarcely ever occurs idiopathically, but usually attacks children who have been weakened by measles or other eruptive fevers.

Treatment—**B.** The main object is to remove the debility from which the gangrene has arisen. You prescribe quinine, cinchona, acids, or perchloride of iron, and support the child's strength with beef or mutton tea, chicken broth, milk, wine, &c. Some physicians advise the use of turpentine internally. Locally you try to lessen the fœtor of the gangrenous part by very frequent injections of permanganate of potash, chloride of lime, or some other disinfectant. Dr. West has advised the use of nitric acid to the part. He says, "I am accustomed to employ the nitric acid, applying it by means of a bit of sponge, or of soft lint or tow, fastened to a quill, while I endeavour, by means of a spoon or of a spatula, to guard the tongue and other healthy parts, as far as possible, from the action of the acid. Some increase of the swelling of the cheek almost invariably follows the application of this agent, a circumstance that may at first occasion unfounded apprehension lest the disease be worse. Twelve hours, however, must not be allowed to elapse without the mouth being carefully examined, in order to ascertain whether the disease has really been checked, or whether there is any appearance of mortification in the parts beyond the yellow eschar left by the first application of the acid. The cauterisation may now be repeated, if it appears necessary, and even though the disease has seemed completely checked, yet reliance must not be placed on the improvement continuing, but the mouth must be examined every twelve hours, for fear the mortification should spread unobserved."

SALIVATION.

Prognosis.—This complaint may arise in different ways:—1. Irritation of the gums or teeth is one of the most common causes, and as soon as this is removed the flow of saliva ceases. 2. The use of mercury or iodine, even in very small doses, will, in many subjects, produce salivation. In such cases the constitutional peculiarity should be borne in mind when these medicines are required. 3. Irritation of the stomach or œsophagus, or even pregnancy, not unfrequently causes it, and the prospect of recovery depends upon our ability to relieve the original affection. 4. It occasionally accompanies diseases of the nervous system. 5. There are some cases in which no sufficient cause can be discovered. These are often exceedingly rebellious to treatment, but, as a rule, they slowly recover after the lapse of many months.

Treatment. A. The chief point is, of course, to discover the cause, and, if possible, to remove it. In case of diseased teeth, or of a collection of tartar, the irritation arising from them must be prevented. Where disorder of the digestive organs seems to have excited the salivation appropriate treatment should be resorted to. Constipation has been especially pointed out as tending to produce it, and senna has been strongly recommended as an aperient.

B. Astringent gargles are of use, both in preventing fœtor, and also in restraining the secretion of the glands. Thus, you may employ a solution of tannin, alum (F. 195), chlorate of potash, sulphate of zinc, or carbolic acid.

C. In very obstinate cases opium has been found especially valuable. It probably acts beneficially, by lessening the excitability of the nervous filaments, and also by diminishing, as in the case of other glands, the amount of fluid excreted. The subcutaneous use of atropia may be also employed, as this drug tends to lessen secretion.

D. All stimulating food should be avoided, as well as condiments, such as pepper, vinegar, and mustard, and unless required for some special reason, alcoholic drinks should not be taken.

CATARRH OF THE PHARYNX.

Prognosis.—This common complaint occurs in an acute or chronic form. When acute it generally subsides in a few days, unless it has originated from some constitutional disease, such as syphilis. Chronic pharyngeal catarrh, on the contrary, is exceedingly obstinate, producing a constant hawking up of phlegm, especially in the early mornings.

Treatment (p. 23).—**A**. In acute pharyngeal catarrh you have seldom much chance of removing the cause, since, in the majority of cases, atmospheric changes have given rise to it. Where, however, it is associated with enlarged tonsils you can often prevent the recurrence of attacks by the daily use of a gargle of chlorate of potash or borax.

B. In most cases the uneasiness is quickly relieved by brushing the inflamed membrane with a solution of perchloride of iron (F. 191), or you may employ a weak solution of nitrate of silver (F. 201). Where there is an objection to this the patient may use an astringent gargle of gallic acid, sulphate of zinc, or of sulphuric or nitric acid.

Chronic Pharyngitis.

Treatment (p. 32).—**A**. First carefully inquire into the cause. In some cases it results from the irritation of dust, in others from a residence near the sea, or one exposed to the north or north-east winds; or it may have been produced by indulgence in alcohol, or the immoderate use of tobacco. It is wiser for the patient to abstain entirely from these than to attempt to use them in moderation. Syphilis is a frequent cause, and requires the employment of iodine or mercury.

F. In many instances the regulation of the diet and the removal of indigestion are sufficient to afford relief, and in all cases these points must be carefully attended to. In children iodide of iron and cod-liver oil are invaluable.

H. The local employment of stimulants is generally required. Creasote inhalations or the spray of sulphurous acid usually fulfil this indication. Various astringent lozenges (F. 203), as of tannic acid, are useful in chronic cases; where the complaint is more recent those of cubebs or guaiacum are of more value (F. 203).

PHLEGMONOUS INFLAMMATION OF THE PHARYNX (TONSILLITIS).

Prognosis.—Notwithstanding the great distress and high fever with which this complaint is accompanied, there is rarely any danger to life. The patient usually gains complete relief as soon as the abscess bursts or is opened by the knife. It not unfrequently happens that the opposite tonsil inflames after the one first affected has recovered. Cases are recorded in which a fatal termination has occurred, but these are very rare.

Treatment (p. 23).—**B.** Formerly venesection and free leeching were always used, in the hope of stopping the inflammatory process, but this method of treatment is now generally abandoned. Where the patient is young and strong and the pain severe he may derive benefit from the application of a few leeches, as they often lessen, for a time, the acuteness of the suffering. In all cases it is wise to reduce the arterial tension and diminish the fever by the use of saline aperients, with which you may combine small doses of tartar emetic. Guaiacum (F. 118) has been found useful as an aperient, and may be prescribed, with or without sulphate of magnesia. Where the patient has had repeated attacks, and the tonsil has been left permanently enlarged, the application of a small blister below the angle of the jaw, at the commencement of the illness, often arrests the inflammation. I need not, however, remind you that blisters ought never to be used if there is the slightest reason to suspect diphtheria, or if the patient is in a low condition of health. Ice is valuable in the early stage, small morsels of it being constantly swallowed; but as soon as severe pain of the ear, or other signs of suppuration, show themselves gargles of warm liquids are more grateful. The inhalation of steam, with or without conium or buchu, is frequently of great service. When you suspect suppuration let the throat be covered with a large poultice, or frequently fomented with hot water.

C. The severity of the pain would seem to indicate the use of opium, which may be given in moderate doses. The want of rest and food always produces great excitability, which can be relieved by small doses of bromide of potash, chloral (F. 99), or henbane.

D. As the pain prevents the swallowing of solids, or, at any rate, makes it very difficult, the patient is necessarily restricted to liquid food. This should consist of milk, beef tea, &c.; but alcoholic stimulants should be avoided. The muscles of the throat are often kept in a state of constant irritation from the large quantity of mucus that obstructs the narrow opening of the fauces. In order to promote the more ready removal of this, and thereby afford rest to the muscular structures, acid or slightly astringent gargles may be employed.

G. As soon as you can detect suppuration, you may open the abscess very cautiously with a bistoury, the blade of which is defended by sticking plaster to near its point, but usually the abscess bursts of itself.

RETROPHARYNGEAL ABSCESS.

Prognosis.—Most of the cases arise from disease of the vertebræ, and, therefore, their prospect of recovery depends upon the chance of improvement in the original disorder. Where it follows fevers, or, as occasionally happens, has arisen idiopathically, you may expect favorable results if you can discharge the pus by a free opening.

Treatment.—The only point to be attended to is the early and free evacuation of the abscess. This may be effected, as in tonsillitis, by a guarded knife, or, as recommended by Niemeyer, by the nail of the forefinger well sharpened to a point. If the opening is a small one, the nurse should be ordered to press her finger on the sac, in case dyspnœa should afterwards return.

INFLAMMATION OF THE ŒSOPHAGUS.

Prognosis.—Catarrh of the œsophagus occurs occasionally as part of a similar affection of the mucous membranes of the respiratory and digestive tracts. It is unattended with danger, and the symptoms are usually so slight that they may be easily overlooked. It may also result from the swallowing of irritant poisons or from injuries, and the prognosis must then be determined by the nature and extent of the mischief. It sometimes occurs in heart disease, and other conditions affecting the venous system, but under these circumstances it is seldom attended with danger to life. Rare cases present themselves where ulceration of the œsophagus ends fatally, either by the production of hemorrhage, or by implicating one of the neighbouring organs.

Treatment (p. 23).—**B.** If there should be much tenderness over the œsophagus, it will be wise to apply a few leeches externally, followed by poultices. In slight cases, ice, swallowed frequently in morsels, is likely to be of benefit.

C. Opium, in some form, is usually required. Morphia injected subcutaneously is more likely to be useful than when given by the mouth.

D. In slight cases, the patient must be restricted to liquids, such as milk and beef tea. Where you have reason to suspect ulceration, nutrition must be entirely sustained by enemata.

SECTION III.

CHRONIC DISEASES OF THE ŒSOPHAGUS.

STRICTURE OF THE ŒSOPHAGUS.

Prognosis.—The cause of the stricture is the main subject for consideration. 1. Where it arises from cancer the prospect is hopeless, for not only does the disease steadily increase, but the neighbouring structures are also apt to be implicated in the new growth. 2. Stricture resulting from the swallowing of corrosive fluids is more hopeful, as there is a greater chance of the treatment by dilatation being successful. 3. If the narrowing is produced by the growth of an aneurism or other tumour, the duration is longer than in cancer of the œsophageal walls, but the termination is equally fatal. 4. In spasmodic stricture of the œsophagus, the prognosis is as favorable as in the other classes it is gloomy. The symptoms not unfrequently commence and terminate quite suddenly.

Treatment.—Dilatation can be successfully employed when the stricture is the consequence of the cicatrisation of an ulcer. In such cases it should be commenced as early as possible and continued for a length of time, the size of the bougie being gradually increased. It is unnecessary in spasmodic stricture, and is injurious when the narrowing is associated with cancer, aneurism, or a tumour compressing the œsophagus. The stomach-pump may be required in spasmodic stricture, but it should be very cautiously employed in cancer. In all cases it is advisable, as long as possible, to keep the patient on a liquid and nutritious diet, such as soups, broth, milk, and farinaceous food. When the power of swallowing liquids is quite gone, and you are unable to pass the tube of a stomach-pump, you must have recourse to nutrient enemata, which may be given two or three times a day. As a last resource the stomach may be opened, but the operation has been rarely successful.

Treatment of Spasmodic Stricture of the Œsophagus (p. 39).

A. In a large proportion of cases there have been symptoms of feeble digestion for some time before the attack. Inquire as to the state of the menstruation, and whether the patient is suffering from leucorrhœa or any other uterine disorder.

F. In most cases the bowels require regulation, and an enema of turpentine or assafœtida is generally useful. As soon as the patient is capable of swallowing you had better prescribe the decoction of aloes or some other stimulating aperient, to be taken daily.

H. Until the patient can freely swallow you will find it the best plan to soothe the nervous system. You may, for this purpose, use morphia subcutaneously, or belladonna, chloral, or bromide of potash, in enemata. The sucking of pieces of ice often relieves the spasmodic action of the muscles, and thus enables the patient to take food. Occasionally you meet with cases of a spasmodic affection combined with catarrh of the œsophagus. In such you must modify the treatment, by directing your attention to the symptoms that seem most urgent. After the stricture has been overcome, a course of phosphorus, cod-liver oil, iron (F. 37), strychnia (F. 94), or other tonics should be given.

CHAPTER VIII.

DISEASES OF THE STOMACH.

DURING fasting, both the muscular and glandular coats of the stomach are at rest; but as soon as food is placed in it, secretion and motion are excited. The most certain way, therefore, by which you can give repose to this organ is to debar the patient from all food, and to maintain nutrition by enemata. To favour absorption, by the large intestine, only three or four ounces of fluid should be injected at a time. The enema may consist of milk or beef tea, and it is often advisable to mix twenty or thirty grains of pepsin to the former, or a few drops of dilute hydrochloric acid to the latter. When there is much exhaustion, one or two tablespoonfuls of brandy may be also added. Leube advises that one part of the pancreas of the ox or pig should be rubbed up with three parts of finely scraped meat, together with sufficient warm water to admit of the mixture passing through the enema pipe.

As the amount of gastric juice secreted by the stomach is in proportion to the quantity of the food to be digested, you ought to restrict your patient to small and frequently repeated meals whenever you deem it necessary to lessen the activity of the organ. Liquids, such as milk and beef tea, are most suitable; and, if there is no tendency to fermentation, you may also give various kinds of farinaceous food, such as sago, arrowroot, or cornflour.

Alimentary substances vary greatly as regards their solubility in the gastric juice. All food is apt to set up catarrh of the mucous membrane when it is too long retained in the stomach, and you should therefore select what is most easily digested whenever the gastric secretion is defective. As regards animal food, the more tender the fibre the more quickly it dissolves; consequently, mutton is more digestible than beef, and the latter more so than veal or pork. Game, chicken, and the smaller birds, agree better with a weak stomach than the goose or duck, as these latter contain a quantity of oil. The oily fish, such as salmon, mackerel, and herring, are less digestible than the sole, haddock, or whiting. The larger fish, such as the cod, being harder, are longer in digesting than those that are softer. The quickness with which vegetables and fruit dissolve in the stomach depends chiefly on the proportion of cellulose they contain; thus, the potato generally agrees better than the turnip or carrot, as these are more woody. Fruit digests more readily when cooked, and dried fruits are almost always difficult of solution in the gastric juice on account of their hardness. Stale bread agrees better with a weak stomach than when it is new, because the former, being dry, absorbs the gastric juice more readily than the latter.

We employ drugs in disorders of the stomach:—1. For the purpose of stimulating its secreting and muscular coats. 2. To lessen abnormal irritability, or relieve pain. 3. To act chemically upon its secretions or its contents.

The stimulants to the gastric secretion comprise various bitters, which probably act as irritants to the mucous membrane. Indirectly, we can often increase the digestive powers by improving the state of the blood or nervous system. It is a common error to prescribe bitters, without first ascertaining whether the loss of appetite and other symptoms of which the patient complains are not the results of gastric catarrh. If this is the case you should first attend to the excretory organs, as an abnormal condition of these is the commonest cause of inflammation of the mucous membrane of the stomach.

The bitters in most general use are gentian, calumba, quassia, cascarilla, chiretta, and cinchona. There is not, excepting in the case of cinchona, much difference in action between them. If the tongue becomes white, the bowels confined, or the patient feverish, whilst taking any of these drugs, it should be omitted. Iron is invaluable where dyspepsia is connected with anæmia, but its tendency to cause constipation must be remembered, and obviated, if necessary, by combining it with an aperient. Nux vomica is employed where there is debility of the muscular coat of the stomach or intestines. Arsenic, zinc, and other mineral tonics are useful when the want of secretion seems to arise from an enfeebled state of the nervous system.

Sedatives are prescribed whenever there is great irritability of the stomach. The most useful are the alkalies and their carbonates, bismuth, cerium, nitrate of silver, morphia, hydrocyanic acid, and belladonna. The alkalies are of value when the irritability arises from acute or subacute gastric catarrh. Bismuth is given in chronic catarrh attended by an undue secretion of mucus. The oxalate of cerium acts like bismuth, but is more variable in its effects. The nitrate of silver is only of use in very chronic cases, and is chiefly to be relied upon when there is excessive secretion, as in waterbrash. Morphia and hydrocyanic acid are invaluable where there is much pain during digestion, or when vomiting is present, as the result of an irritable state of the mucous membrane.

The drugs that act chemically on the digestive process are very numerous. The principal are pepsin, hydrochloric acid, creasote, carbolic and sulphurous acids, charcoal, and the alkalies and their carbonates.

Pepsin and hydrochloric acid may be given, alone or in combination, shortly after a meal, to supply a deficiency of the gastric juice. Creasote, carbolic acid, and sulphurous acid, are useful when fermentation takes place in the stomach and is unattended by much acidity. The alkalies and their carbonates may be prescribed whenever acidity is a prominent symptom. Charcoal is chiefly efficacious when the flatulence arises from disorder of the large intestine.

The stomach-pump has been much employed of late years to remove accumulations of undigested and irritating food, and to wash away abnormal secretions from the stomach, as in stricture of the pylorus and in chronic gastric catarrh. Some advise its use even in gastric ulcer, but I have seen it greatly aggravate the symptoms of this complaint. The ordinary stomach-pump is the best instrument, and Vichy water or a weak solution of bicarbonate of soda is usually employed as the injection.

Some prefer an india-rubber tube to the pump. When it is straight, liquids can be poured through it by means of a funnel, and by bending it at the mouth, it can be made to act as a syphon and so withdraw the contents of the organ.

SECTION I.

MORBID STATES NOT NECESSARILY DEPENDENT ON ORGANIC DISEASE.

ACIDITY.

One of the properties of the gastric fluid is to prevent fermentation. Not only is it, when in a normal state, incapable of undergoing this chemical change itself, it arrests this process when brought into contact with substances which have already begun to decompose. Various acids are produced by the fermentation of materials containing starch or sugar, and torulæ present themselves under the microscope. Whenever, therefore, you discover these vegetable organisms in vomited matters you know that this process has being going on, and also that the secretion of gastric juice must have been imperfect. Although a deficiency in the quantity of the peptic fluid, however produced, will give rise to acidity, this occurs most strikingly when particles of food have been long retained in the stomach. Consequently, in chronic catarrh attended by a copious secretion of mucus, and in obstructed pylorus, we find the worst cases of acid fermentation.

It has been much debated, whether an increased secretion of acid may take place from the mucous membrane of the stomach and produce the symptoms of acidity, independently of fermentation. It is most probable that such is the case, for an excessive amount of acid fluid is often vomited by persons suffering from the irritation of a renal or biliary calculus, when the stomach has been for some time empty.

In whatever way an increased formation of acid takes place certain symptoms are produced. A sour taste and acid eructations occur; heartburn sometimes forms the chief subject of complaint, in many diarrhœa is constantly present. A craving sensation or a feeling of intense sinking at the epigastrium, relieved by food or stimulants, is another prominent symptom.

Treatment.—In order to remove acidity you should, in the first place, direct your attention to the cause producing it, whether this be gastric catarrh, obstructed pylorus, feeble digestion, or some general disorder of the system, such as gout or rheumatism. Let the diet be composed of substances that will not readily pass into fermentation. Your patient should avoid tea, coffee, malt liquors, wines, and soups, as well as food containing an excess of starch. Milk and lime water makes an excellent substitute for the fluids just mentioned, the lime water preventing the milk from readily becoming sour. In most cases frequent doses of alkalies, such as liquor potassæ (F. 208), or bicarbonate of soda or potash (F. 205), give relief, both by neutralising the acidity, and also by stimulating the peptic glands to an increased secretion of the digestive fluid.

The bowels require careful regulation. In many cases they are at first relaxed, but as soon as the acidity diminishes constipation is complained of.

FLATULENCE.

The stomach ordinarily contains a certain proportion of air, partly swallowed, partly the result of chemical changes in the food. An excessive accumulation of gas may arise from atony of the muscular coat, allowing the food to remain in the stomach for an undue length of time, and thereby rendering it more liable to decomposition, or it may accompany chronic inflammation of the mucous membrane. Again, the gas may become mixed with sulphuretted hydrogen, produced by the decomposition of the nitrogenous materials of the food or of bile.

Flatulence, in addition to the discomfort it occasions, may give rise to various sensations very alarming to the patient. It sometimes induces severe attacks of spasmodic pain attended by fainting, and in hysterical females it often causes a feeling of choking, the result of spasm of the œsophagus. Palpitation, attended with dyspnœa and irregular or intermitting action of the heart, is another common result of an accumulation of gas. This is most apt to occur when the muscular structure of the heart is enfeebled by dilatation or fatty degeneration.

Treatment.—**A.** You must first ascertain what is the state of the stomach that prevents the due secretion of the gastric juice, and direct your attention to remove it. Thus, in atonic dyspepsia you may prescribe acids (F. 26), or pepsin, shortly before a meal, or sulphurous acid between meals, so as to destroy any torulæ that may remain in the stomach, or, if it is associated with a flatulent state of the colon, you may give charcoal. In inflammatory dyspepsia you will find alkalies most useful (F. 205), combined with carbolic acid or creasote, whilst in cases where there are eructations of sulphuretted hydrogen, a mineral acid before each meal (F. 24), with charcoal an hour or two afterwards, is most efficacious.

Your patient should avoid all substances that are especially apt to ferment, such as tea, coffee, soups, vegetables, fruit, wines, and malt liquors. He should be restricted, as much as possible, to solid food, and abstain from effervescing liquids.

To any drugs you may prescribe you will generally have to add stimulants, such as aromatic spirit of ammonia, chloroform, valerian, peppermint, or cinnamon. In employing aperients select those that act fully, but do not excite the intestines to frequent efforts (F. 144). Avoid saline aperients, or if it be necessary to use them, let some stimulant or carminative be added.

WATERBRASH.

Patients affected with waterbrash experience a severe spasmodic pain at the epigastrium, often attended with a feeling of constriction, which is immediately relieved by the rejection of a clear, watery fluid. It does not necessarily indicate any structural disease of the stomach, although anatomical changes have been occasionally discovered after death at the pylorus. The complaint is generally curable, but it is very apt to recur. A sudden and excessive flow of saliva is not uncommon in gastric disorders, and this is often confounded with waterbrash. The former is, however, unattended by pain, and the liquid that flows from the mouth has the ordinary physical and chemical characters of the salivary secretion.

Treatment.—A. You should first prohibit food likely to give rise to irritation, such as oatmeal, brown bread, and other substances of a like nature. The giving up of such articles of diet and of alcoholic liquors will in many cases suffice to cure the complaint.

Where the regulation of the diet is not efficacious you must have recourse to astringents, such as bismuth (F. 11), zinc (F. 16), kino, logwood, or tannin. Opium is always of use, and may be combined with any of the above. In very chronic cases the oxide or the nitrate of silver is often more valuable than any other astringent (F. 17).

VOMITING.

No symptom more frequently proves rebellious to treatment than vomiting. Not only is it the most common accompaniment of various gastric disorders, but it constantly presents itself in the course of other diseases. When, therefore, you are called to a case of vomiting you have first to ascertain whether it is an indication of disease in the stomach, or of some other organ. In adults always remember to examine the state of the kidneys; in children very carefully investigate the condition of the brain. Where the vomiting is not dependent on gastric disorder the treatment must, of course, be regulated by that of the primary disease.

The most common causes of vomiting in disorders of the stomach are—1. Nervous irritation. 2. Fermentation. 3. Acute catarrh. 4. Chronic catarrh of the mucous membrane.

Treatment.—In vomiting arising from nervous irritation the rejection is usually sudden, often violent, and immediately, or very shortly after the taking of food or drink. What is rejected is either slightly sour or in the same state in which it had been swallowed, and the microscope shows in it no traces of torulæ or sarcinæ. If mucus be present its quantity is small, and it is unaccompanied by blood. It is in this kind of vomiting that sedatives are so especially useful. Morphia, either internally or subcutaneously, is invaluable; atropine, hydrocyanic acid (F. 73), and laurel water, were formerly the chief remedies, but chloral or bromide of potash (F. 99) may be also given, alone or combined. A small blister to the epigastrium, with morphia (half a grain) sprinkled on the raw surface, is generally of use. Restrict your patient to pieces of ice, milk and lime water, beef or mutton tea, in very small quantities and often repeated. When the vomiting seems to be accompanied by exhaustion, brandy and soda water, champagne, or an enema of beef tea and brandy, are especially useful.

"*Hysterical vomiting*" arises from nervous irritation. It is very intractable, and seems often more a habit than a disease. The patient rejects a part of every meal, often before she leaves the table, but has no pain, and does not lose flesh. It is best treated by carbonate of iron, quinine (F. 32), strychnia (F. 91), and other tonics, by fresh air and sea bathing, or by shower baths. The bowels should be carefully regulated with aloes (F. 141), or by enemata. A somewhat similar kind of vomiting often occurs in phthisis. It may be relieved by giving a dose of morphia and hydrocyanic acid shortly before a meal (F. 73), or by the frequent application of small blisters to the epigastrium. Acids, along with calumba, are often of value between the meals (F. 27).

Vomiting resulting from fermentation usually occurs at longer intervals than that just described. It is often accompanied by a sensation of burning at the chest and by distressing flatulence. The fluids rejected are acid, hence the sour smell, are often green in colour, and under the microscope are seen to be loaded with torulæ. In such cases you should ascertain if there is any obstruction at the pylorus producing dilatation of the stomach. In vomiting arising from fermentation you prescribe carbolic acid (F. 219), creasote (F. 221), sulphurous acid, and alkalies (F. 205), if there be great acidity. The diet should consist of liquids that do not readily ferment, such as milk and lime water, beef tea, and mutton tea. All starchy and saccharine materials must be prohibited. Alcoholic drinks usually add to the mischief, and should be avoided. No benefit is derived from sedatives.

The vomiting in acute gastric catarrh is usually violent, very frequent, follows almost directly the use of food, and occurs even when fasting, from the irritation excited by the mucus. The mucus rejected is thick, ropy, often streaked or mixed with blood, and there is usually also some tenderness of the epigastrium. In such cases you must avoid all medicines, except two or three grains of calomel sprinkled on the tongue, so as to act upon the bowels. If the tenderness is severe, and there be no contraindication, the application of a few leeches to the epigastrium, followed by a poultice, will generally relieve the nausea and vomiting. Where you cannot employ leeching you may use dry cupping or continuous hot poultices or fomentations. In severe cases all food must be forbidden, and the patient should be confined to pieces of ice, which he may suck from time to time, and if requisite, the strength may be supported by enemata of beef tea. In cases of less severity you may give a spoonful of milk every half hour, or an equally small amount of beef or mutton tea.

The vomiting in chronic gastric catarrh usually occurs only at intervals, not unfrequently at the same hour each day, or after some particular meal. In addition to the food a large quantity of thick mucus is rejected. In some instances the quantity of this is enormous. In all cases, the first and most important point is to secure a free and regular action of the bowels. When the vomiting is frequent bismuth is invaluable (F. 43). Students generally look upon this drug as a specific for vomiting, but this is quite a mistake; it is useless where it arises from fermentation, injurious in that dependent on irritation or acute gastric catarrh. You may also use oxide of zinc (F. 16), oxalate of cerium (F. 48), or lime water. Where the mucus is excessive the oxide or nitrate of silver (F. 47), acetate of lead (F. 15), tannic acid, and other astringents, are of great service. The diet must be conducted according to the rules laid down for chronic gastric catarrh.

The presence of bile in the fluids rejected from the stomach furnishes us with no indication for treatment, for continued vomiting, however produced, causes the contents of the gall-bladder and ducts to flow into the stomach. Nevertheless, when bilious vomiting has persisted more than twenty-four hours, and the fluid has an alkaline reaction, you will often find the dilute sulphuric acid (F. 8), repeated every two or three hours, stop it.

HÆMATEMESIS.

This is always an alarming and dangerous occurrence.—1. It most frequently arises from an ulceration of the stomach or duodenum perforating a blood-vessel; in other cases the bleeding takes place from congestion of the mucous membrane in the vicinity of a simple or cancerous sore. In rare cases the ulceration is situated in the œsophagus. 2. From congestion of the vena portæ or its branches, as in chronic atrophy of the liver and hepatic congestion. 3. From alterations of the blood, which allow it to transude through the vessels; in this way hæmatemesis occurs in acute yellow atrophy of the liver, scurvy, splenic disease, chronic atrophy of the kidneys, &c. You must bear in mind that there may be extensive bleeding into the digestive canal, with little or no vomiting of blood. When, therefore, you find a patient has become suddenly anæmic without any apparent cause, you should suspect hemorrhage into the stomach or intestines, and carefully examine the stools for the pitchy appearance indicative of partially digested blood.

Prognosis.—This depends upon the amount of blood lost and the power of the patient to sustain it, and on the probability that the hemorrhage can be stopped. For instance, the prognosis will be more favorable in the case of a simple than of a cancerous ulcer, because you are more likely to be able to restrain the bleeding from the former than the latter. In simple gastric ulcer the first attack of hæmatemesis is rarely fatal, but in chronic cases, in which the tissues often become so thickened that retraction of the injured vessel is difficult, you may fear a fatal termination. Congestion of the liver, although it may produce excessive bleeding, usually ends favorably, but you should always regard as dangerous severe gastric hemorrhage occurring in drunkards. They bear the loss of blood badly, and it seldom takes place until the liver has suffered serious injury from cirrhosis.

Treatment (p. 26).—B. In severe cases an ice bladder may be applied to the epigastrium, but the effect of this should be carefully watched, lest the action of the heart become too much depressed. Where portal congestion is the cause of the hemorrhage you are often advised to give a saline aperient along with acids, but it is wise to defer this until you ascertain how far the hemorrhage has proceeded, and what effect it has produced upon the heart.

In slight cases the mineral acids, such as the sulphuric acid (F. 8), may be alone necessary; but in those that are more severe, gallic acid (F. 1), alum (F. 10), tannic acid, acetate of lead (F. 14), or the oil of turpentine (F. 7), may be used. If the bleeding has arisen from ulceration you may inject ergotine subcutaneously.

In severe cases you must have recourse to stimulants, and may apply ammonia to the nostrils, or give brandy in an enema. It is better to avoid the administration of alcohol by the mouth, as it is apt to produce vomiting, which may increase the bleeding. In extreme cases transfusion of blood may be required.

D. Insist upon perfect rest in bed, as the hemorrhage often goes on, without any indication, until fainting is produced; it is always wise therefore, to keep the patient in the recumbent position, until all fear of a recurrence has passed away. The room should be cool, and all food and drink must be forbidden, excepting small pieces of ice, which may be placed in the patient's mouth from time to time. Abstinence from food should be enforced until the bleeding has entirely ceased; you may then allow small quantities of beef tea or milk, either iced or cold, at frequent intervals.

HICCOUGH.

This often arises from a slight irritation of the stomach, but when accompanied by signs of a failing heart it indicates great danger to life. It occasionally occurs without any other symptom, and produces much exhaustion, in some instances even death. Such cases chiefly take place in old people who have previously suffered from gout, or who are affected with chronic kidney disease.

Treatment (p. 29).—A. It is advisable to give a dose of calomel, followed, if necessary, by some warm aperient, such as the decoction of aloes or the compound powder of rhubarb (F. 119), for the purpose of removing any undigested material that may have given rise to irritation of the intestinal canal.

B. The patient is often so much exhausted that ammonia or brandy is required.

C. Your main reliance to afford relief is on the employment of sedatives. Chloral (F. 98) often checks the hiccough, at any rate for some hours, and may be followed by frequent doses of bromide of potash, ether, and morphia (F. 97). Morphia, given subcutaneously, is very beneficial, in case there be no coexisting atrophy of the kidneys. Some recommend musk as a stimulant to the nervous centres. The application of a mustard poultice to the epigastrium is useful, and in severe cases a blister should be applied.

GASTRIC NEURALGIA.

Although pains of a neuralgic character are common in the epigastric region, neuralgia of the stomach itself, independent of organic disease, is of rare occurrence. You frequently meet with very severe cases of intercostal neuralgia in the female, the pains being aggravated at the catamenial periods, and with rheumatism of the upper part of the abdominal muscles. Occasionally you are consulted for neuralgia of the epigastric region, resulting from disease of the spinal bones or cord, or from an aortic aneurism. Neuralgic pains in the epigastrium are also produced by gall-stones, colic, and deeply-seated tumours. We are, however, justified in considering cases as neuralgic in which, after the tenderness over a gastric ulcer has disappeared, the vomiting has subsided, and the patient has gained flesh and strength, the pain has nevertheless increased in violence, and is not restricted to the time during which digestion is going on. Under such circumstances a more liberal diet, the use of iron and other tonics (F. 94) and of stimulants, often rapidly relieves the sufferings of the patient. Some advise galvanism for these cases.

SECTION II.

ACUTE DISEASES OF THE STOMACH.

ACUTE GASTRIC CATARRH.

Prognosis.—Uncomplicated gastric catarrh almost always terminates favorably. When, however, it accompanies chronic kidney disease, dilated heart, or some other serious malady, it not unfrequently hastens the fatal termination by the exhaustion it produces. Where the whole gastro-intestinal canal is affected, as is so often the case in infants, the patient frequently sinks from the effects of the vomiting and diarrhœa.

Treatment (p. 23).—**A.** You rarely have the power of removing the cause, as it has generally ceased to act before you see the patient. Where there is an escape of fetid gas from the stomach, where particles of food are still found in the vomited matters, after repeated vomiting, or there are frequent and ineffectual attempts to vomit, an emetic of ipecacuanha or zinc is advisable. In most cases it is necessary to clear the intestinal canal from any irritating materials that may be present. You therefore place on the patient's tongue four or five grains of calomel, if an adult, or one or two grains in the case of a child, so as to secure a free action of the bowels. It may be necessary to repeat the dose; or, where diarrhœa is present, you may give one grain every three or four hours with advantage. As soon as the vomiting subsides you must keep up a slight purgation either by the use of enemata or by a few doses of the sulphate or citrate of magnesia (F. 136).

B. Where there is much epigastric tenderness and the pulse is tolerably firm, the application of a few leeches often affords immediate relief. If you think the detraction of blood not advisable dry cupping may be used. In all cases keep the epigastrium covered with fomentations or a large hot poultice.

C. After the inflammation has subsided the vomiting may be kept up, either by nervous irritation or exhaustion. In the former case use sedatives, such as morphia and hydrocyanic acid (F. 73); in the latter it may be necessary to prescribe small doses of brandy or champagne.

D. Insist on perfect rest in bed. In severe cases you may have to withdraw all food and restrict the patient to ice for twelve or twenty-four hours. In milder attacks you may allow small quantities of milk, mixed with seltzer or soda water; or, if there is much acidity, with lime water. Others prefer weak mutton or beef tea. Unless the state of the pulse requires alcoholic stimulants, it is better to avoid them.

ULCER OF THE STOMACH.

Prognosis.—Gastric ulcer may be an acute or chronic disease. Notwithstanding the severe pain and constant vomiting that so often accompany this complaint, it is rare for death to occur from exhaustion. Usually a fatal termination is due to hemorrhage or perforation of the peritoneum. Hæmatemesis is rarely fatal on its first occurrence; it is more apt to prove so when the ulcer has extended deeply enough to lay open a large blood-vessel. Perforation is almost invariably followed by death, from the peritonitis it sets up. As a general rule, gastric ulcer in young people, if properly treated, is likely to heal quickly; in the old its course is generally tedious, and in many cases the symptoms recur from time to time, after a cure has apparently taken place.

Treatment (p. 23).—**A**. You have little power of preventing the extension of the disease by the treatment of its causes. When there is reason to believe it has arisen from intemperance indulgence in alcoholic drinks must be prohibited. In some old cases a history of syphilis can be obtained, and then a course of iodide of potash is invaluable, and sometimes removes the complaint when every other method of treatment has failed:

B. Whenever there is much tenderness on pressure and the patient is tolerably strong, the occasional application of a few leeches gives great relief. The epigastrium should be covered with a hot poultice, whether leeches be used or not. Some advise ice-bags, but poultices are generally more agreeable to the patient. In chronic cases small blisters should be frequently applied over the seat of the pain, and, if the suffering be severe, they may be dressed with morphia.

C. In almost every instance opium is required, half a grain or one grain being given three or four times a day. When the pain is very violent morphia may be used subcutaneously, but it is better to give it by the mouth, as it thereby comes directly into contact with the ulceration. In chronic cases you may combine it with bismuth and magnesia (F. 13). The bowels should be kept open, if necessary, by enemata, and all drastic purgatives must be avoided, as they are apt to increase the peristaltic action of the stomach as well as that of the intestines.

D. Rest in the recumbent position is essential in all acute or recent cases. This is often sufficient of itself to relieve both the pain and vomiting. But you must also insist on physiological rest, which should be persisted in until all urgent symptoms have disappeared.

For food you should select milk, or milk-and-water or weak broth, so as to excite as little secretion of gastric juice as possible. As the patient improves the liquids may be thickened with maccaroni, vermicelli, or semolina. Afterwards rusks and light puddings, and finally fish, chicken, or game, may be tried, before you allow the patient to venture on mutton or beef. When the symptoms are acute you ought to limit him to small quantities of liquid at a time, such as one or two tablespoonfuls, often repeated. This is necessary because perforation and hemorrhage are most apt to follow distension of the stomach, and therefore you should endeavour to keep it as empty as possible until all urgent symptoms have disappeared.

SECTION III.

CHRONIC DISEASES OF THE STOMACH.

DYSPEPSIA.

This complaint is not only important on account of its frequency, but because it occurs as a complication of so many affections of other organs. We have already seen that attention to the nutrition of the patient is of primary importance in all chronic diseases, and you have, in such cases, to ascertain how far the gastro-intestinal canal is capable of digesting the food presented to it. It cannot be too often impressed upon the mind of the practitioner that it is not the *quantity* of food that is taken into the stomach of a patient that is important, but the amount that can be dissolved, absorbed, and assimilated.

The symptoms of dyspepsia arise from an imperfect secretion of the gastric juice; consequently any circumstance that lessens the activity of the stomach is capable of giving rise to it. Practitioners have long recognised two varieties, viz. *inflammatory dyspepsia*, or chronic gastric catarrh, and *atonic dyspepsia*. In the latter the derangement consists only in a feeble state, either of the secreting or motor apparatus of the organ. One great difficulty in practice arises from the fact that these two conditions, which require very different treatment, often alternate with each other. A person may be affected with chronic catarrh of the gastric mucous membrane, which, on its subsiding, leaves an enfeebled state of the organ; or a patient liable to weak digestion may be attacked by the inflammatory form of dyspepsia, because the food has remained too long in contact with the mucous membrane. You have, therefore, to watch the symptoms of the patient, and adapt your treatment to the condition in which the stomach may be at the time you are called upon to prescribe.

The discrimination of the slighter cases of inflammatory from those of simple atonic dyspepsia is often a matter of great difficulty, but it is easy to distinguish them when the symptoms are well marked. In chronic gastric catarrh there is rarely much pain directly after eating, though a burning or craving sensation often occurs two or three hours afterwards, relieved temporarily by food or stimulants. In atonic dyspepsia the food is generally said "to lay heavy at the chest," and there may be severe suffering directly after food from an accumulation of flatus, which is relieved by eructation. In the former there is usually a certain amount of tenderness on pressure, in the latter none. Acidity is a common symptom in gastric catarrh; it is rare in feeble digestion; whilst flatulence is more generally complained of when the symptoms arise from atony. In inflammatory dyspepsia the tongue is foul, often yellow, and the taste offensive in the morning; these are usually absent in the latter form of the disease. Nausea and vomiting are common in catarrh, rare in atonic dyspepsia. The bowels are often relaxed, and the urine high coloured, with a deposit of lithic acid or the lithates in gastric catarrh; it is clear, light coloured, and deposits the oxalates or phosphates, and the bowels share the torpor of the stomach in feeble digestion.

CHRONIC GASTRIC CATARRH, OR INFLAMMATORY DYSPEPSIA.

Treatment (p. 32).—**A.** The discovery of the cause is the most important point, because where you can remove it the inflammation will usually subside. Ascertain, therefore, if the patient is a sufferer from disease of the heart, liver, or kidneys, as these morbid conditions are frequent causes of this form of dyspepsia. If these organs are sound go carefully into the history of the patient with respect to gout and rheumatism, since the complaint very often arises from them. In other instances you may trace it to too frequent meals, or too much animal food; still more often to indulgence in alcoholic liquors, or an insufficient amount of bodily exertion.

F. The food should be of a digestible character; it must be taken in small quantities, and the meals ought not to be too frequent. In severe and intractable cases a milk diet is often successful. As a general rule, you should forbid alcohol.

The chief point is to ascertain if there is any hepatic congestion, and, if so, to remove it. In severe cases you may give occasional doses of calomel (F. 145), or blue pill (F. 143), or, in those of a gouty habit, colchicum (F. 115), assisted by some alkaline saline aperient, such as Carlsbad salts, or the sulphate and carbonate of magnesia (F. 136). Where the symptoms are less urgent soda and rhubarb (F. 127) or liquor potassæ (F. 211), together with a pill of podophyllin (F. 148) or leptandrin at night, will generally prove sufficient. Bismuth enjoys a great reputation in this complaint (F. 13). It is most useful when the more urgent symptoms have subsided, and the patient complains of nausea or occasional vomiting, with distension after food, and other signs of dyspepsia. Remember that bismuth is an astringent, so that aperients are also generally required.

FEEBLE DIGESTION OR ATONIC DYSPEPSIA.

Treatment.—**A**. The chief causes of this form of indigestion are—1. Anatomical alterations in the secreting structure of the stomach, such as occur after attacks of chronic gastric catarrh. 2. A deficiency in the amount of the blood. Thus, dyspepsia constantly shows itself after excessive menstrual discharge, leucorrhœa, miscarriage, or long-continued suckling in the female, whilst in the male bleeding piles, insufficient nourishment, or too much liquid food, are common causes. 3. A feeble state of the nervous system leads to atonic dyspepsia by lessening the activity of the secretion or movements of the stomach; consequently it is produced by cares in business, anxiety, and mental distress. Or it may originate from excessive tobacco-smoking or debauchery. In each case you must first ascertain the source of the disease, and, if possible, remove it.

F. Carefully regulate the food. Do not allow much liquid with the meals, and see that they are moderate in quantity, and composed of easily digested and nutritious articles of diet. Many cases require some form of alcohol, but this point must be determined by the habits of the patient and the other circumstances of his case.

Take care that the bowels act regularly, for unless the muscular motion is maintained in the lower parts of the digestive tract that of the upper is sure to be sluggish. Avoid all irritating and exhausting purgatives, and if it be necessary to employ saline aperients add to them some tonic, such as quinine or gentian.

H. Tonics are almost always required.—Where the fault consists in feebleness of the secreting structures, as after repeated attacks of catarrh, you will find acids (F. 24, 25) most useful, and in such cases pepsin and ipecacuanha are invaluable. As the stomach readily becomes inflamed, the stronger mineral tonics seldom agree. Where the blood is deficient iron is especially valuable; and if the appetite is bad you may add to it some bitter, such as quinine (F. 37), calumba, or strychnia (F. 93). In affections of the nervous system the nervine tonics are indicated; either the valerianate or phosphate of zinc (F. 70), strychnia (F. 91), or arsenic (F. 104), may be given. In some of these cases there is a great deficiency in the power of absorbing fats, and you must then have recourse to cod-liver oil.

CANCER OF THE STOMACH.

Prognosis.—This is, under every circumstance, most unfavorable, the usual cause of death being exhaustion. The complaint terminates, as a rule, more quickly than malignant disease in other organs, on account of the early occurrence of ulceration and of the coexisting destruction of the secreting structures. Cases of colloid are usually of slower progress than the other forms of cancer.

Treatment.—As soon as you are satisfied that the case is one of cancer, all medicines likely to diminish the patient's strength must be abandoned. For example, you should forbid the use of mercury, iodine, and saline aperients, as being apt to increase the debility.

F. The diet should consist of materials of a nutritious, but, at the same time, readily digestible character. Highly spiced food, as well as stimulants, should be avoided; but when the weakness is extreme you may allow wine or spirits. If the pylorus is the seat of the mischief, and the stomach has, in consequence, become dilated, the diet must be regulated by the rules laid down for the treatment of that condition.

Where loss of appetite is an early symptom, you may prescribe quinine (F. 32), nux vomica (F. 92), calumba, or some other bitter. If anæmia be present you will have recourse to iron, the best forms being the saccharated carbonate, and the citrate. In case of constipation, you may use aloes or an aperient enema.

The symptoms that usually require treatment are pain, vomiting, and diarrhœa.

The pain is best relieved by the subcutaneous injection of morphia, which may be repeated if necessary two or three times a day, but in some cases more alleviation is afforded by a mixture of chloral and bromide of potash (F. 99).

Foul eructations require the use of charcoal (F. 220), or carbolic acid. Cajuput oil has been recommended, in doses of one to three drops on a piece of sugar, for the relief of flatulence.

Dilatation of the Stomach.

Prognosis.—This condition may occur as an acute or a chronic affection. The acute form is exceedingly rare, and generally presents itself in persons enfeebled by previous illness. The employment of the stomach-pump to relieve the distended organ is the proper mode of treatment. Chronic dilatation arises in most cases from narrowing of the pyloric orifice, but it occasionally occurs when the muscular coat has been a long time incapable, from mere feebleness, of expelling the contents of the stomach. Where the constriction is caused by cancer the prospect is, of course, bad, as the original malady is sure to end fatally. When the thickening of the pylorus is of a fibroid character, the case is of longer duration, and the symptoms come on more gradually, but eventually the patient sinks from exhaustion. Some cases of recovery are recorded in which the narrowing seemed to have arisen from the contraction of the cicatrix of an ulcer, but, as a rule, these terminate fatally. If a tumour has produced the dilatation by compressing the pylorus or duodenum, the chief elements in the prognosis are the nature of the new growth and the amount of constriction it has produced.

Treatment (p. 37).—**A**. Excepting in dilatation from muscular atony, which is rare, and which must be regarded as a case of feeble digestion, we have no causal indications for treatment; we are, of course, unable to dilate mechanically the obstructed pylorus, on which the dilatation usually depends.

You would imagine that the vomiting, which accompanies the disease, would effectually prevent any accumulation, but it is more of the nature of regurgitation than of vomiting, and you can always, even directly after it has occurred, prove by percussion that the organ is still overloaded. This, no doubt, arises from the muscular fibres having been so stretched that they have lost their tone, and are unable to assist in the expulsion of the contents. It has been recommended that the stomach should be frequently washed out by means of the stomach-pump, so as to remove all residual matters, as well as the mucus that adheres to the surface of the membrane. The cases in which I have tried this do not bear out the strong expressions of favour with which it has been regarded by many authors. In all probability the cases best fitted for this method are those of simple fibroid thickening of the pylorus.

Whether or no you employ the pump, you should restrict the patient to frequent and small quantities of food, so as to permit of digestion going on with as little distension of the stomach as possible. I have also seen benefit from the application of a flannel or elastic bandage to the abdomen, to raise the organ and thus lessen the labour of its muscular coat in propelling the food through the pylorus.

H. Tonics are seldom of much use, as they are digested with as much difficulty as the food, and also because the power of absorption by the stomach is much lessened by its distension. Galvanism might be expected to be of value, but it has seldom proved so, probably because the distension is so entirely from a mechanical cause.

The results of dilatation of the stomach that require consideration are—1. Fermentation of the food. 2. Vomiting. 3. Emaciation. 4. Constipation.

The vomiting chiefly arises from fermentation, so that whatever lessens the latter reduces the former. Various drugs that check this process are usually prescribed. These are—carbolic acid (F. 219), creasote (F. 221), sulphurous acid, sulphite of soda (F. 222), and common salt. The sulphurous acid is the most effective. When the acidity, as is often the case in the early stage, is the prominent symptom, you may relieve it by means of chalk, lime water, or alkaline carbonates (F. 209). The main point, however, is to prevent the formation of the acid by a careful selection of the food; thus, you prohibit starch and sugar and restrict your patient to animal broths, milk and lime water, coffee, eggs, minced meat, and fish. In some cases cod-liver oil forms a useful adjunct. In cases of simple atony a purely milk diet answers best.

Constipation should not be treated by the ordinary aperients, as these are often very ineffective, on account of their not being properly digested or absorbed. It is a better plan to relieve the bowels by enemata, but you must remember there is seldom the necessity for a daily evacuation, as only a small quantity of food finds its way into the intestine.

Failure in nutrition sooner or later shows itself, and the patient sinks from exhaustion. When, therefore, it is obvious that the amount of food digested is insufficient, you must have recourse to nutritive enemata, which may be administered two or three times a day.

CHAPTER IX.

DISEASES OF THE INTESTINES.

WHEN a person is at rest, or asleep, the action of the intestines is very slight, whilst exertion stimulates their contractions. Whenever, therefore, there is a tendency to diarrhœa you inculcate rest, whilst in cases of constipation the patient should take regular and active exercise.

The nature of the food influences the intestinal movements. Liquids, being to a great extent absorbed before they reach the colon, are to be preferred when it is necessary to give rest to the canal, as in cases of typhoid or tubercular ulcerations. Milk and farinaceous food are more constipating than beef tea or other animal broths.

The greater the amount of any constituent of the food that is insoluble in the gastric and intestinal juices the larger, of course, is the amount of fæces produced, and the more stimulating, therefore, it is to the bowels. Thus, farinaceous and most kinds of animal food are constipating, whilst fruit and vegetables, being less soluble in the stomach, tend to excite the muscular coat of the intestines. Brown bread, oatmeal, green vegetables, and cooked fruit, on account of their insolubility, stimulate the contractions of the bowels, and are, therefore, of especial value in the treatment of chronic constipation.

The Pharmacopœia abounds with drugs that stimulate the contractions of the intestines, and which, in most cases, also increase the secretion of the mucous membrane, or of the glands opening into it. They are usually divided into laxatives, simple, drastic and hydragogue purgatives.

The laxatives include castor oil, magnesia, and sulphur. They are preferred where it is desirable to procure a free evacuation of the bowels without greatly stimulating the muscular coat. Castor oil is the aperient usually prescribed where you wish to operate upon the bowels with the least possible irritation.

Simple purgatives comprise various salts of soda and magnesia, especially the sulphates and tartrates, also rhubarb, senna, and aloes. The salines are best adapted for cases of hepatic congestion, as they remove, without much irritation, a considerable amount of serous fluid. They are not fitted for anæmic cases on account of their tendency to drain away the liquid part of the blood. It is unwise to persist in their use for any lengthened period, as they are apt to produce an atonic condition of the digestive canal, and the bowels become, thereby, so enfeebled that the strength of the doses must be gradually increased. Rhubarb is not often used by itself as a purgative; as it tends to leave constipation after its first effects have passed away it is generally combined with aloes or colocynth. Senna is also usually given in combination with other aperients. Aloes seem to act chiefly on the lower part of the large intestine, and is well adapted for cases of chronic constipation where a long course of aperients is required.

Drastic purgatives, such as jalap, scammony, colocynth, and croton oil, act more severely than those contained in the class last mentioned. They are preferred when it is desirable to operate quickly and fully. The first three are generally added to other purgatives to assist in their action, but, from their tendency to produce griping, they are rarely used alone. Croton oil is invaluable in affections of the brain where you require a powerful derivative action and where there is a difficulty in swallowing, half a minim or one minim may be placed on the tongue of the patient.

The hydragogue purgatives include gamboge, elaterium, and the acid tartrate of potash, and they are chiefly prescribed when it is necessary to remove dropsical effusions. The compound powder of jalap is that most generally employed; gamboge is very effective when combined with the acid tartrate of potash or the compound jalap powder; elaterium may be given in doses of one sixteenth to one half of a grain every three hours until it operates.

Enemata operate on the bowels without irritation, and may be employed when purgative medicines are inadmissible. A sufficiency of fluid should be injected, varying from one to three, or even four pints; it ought to be used warm, and may consist of water, soap-and-water, thin gruel, or barley water. Castor oil or turpentine added to the injection increases its efficiency. As these float upon the top of the water, and are apt to be left in the basin, it is a good plan to inject them first, beaten up with half a pint of water, and afterwards to throw up the remainder of the fluid. When an enema is to be administered the patient should lie on his left side, and the fluid should be very slowly injected. As soon as a feeling of griping comes on the injecting may be suspended, to be resumed when the desire to evacuate the bowels has passed away. The patient should be encouraged to retain the fluid for about ten minutes, in order that the whole of the large intestine may be stimulated to action.

When an enema is used to arrest diarrhœa a very small quantity of thin, boiled starch should be employed. One or two ounces is sufficient, and tincture of opium is usually mixed with it. In chronic or severe cases you may add acetate of lead or sulphate of copper.

It is a common practice to administer purgative enemata by means of an india-rubber ball. Such an apparatus is not well fitted for the purpose, the fluid being injected with very little force. A pump, provided with an elastic tube, is much more effective, as the force can be graduated according to the circumstances of the case. For small enemata used to control diarrhœa an india-rubber bottle or small syringe is the best instrument.

SECTION I.

MORBID STATES NOT NECESSARILY DEPENDENT ON ORGANIC DISEASE.

The diseases of the intestinal canal are so common that you are daily called upon to treat them. Many are comparatively trifling; some are very difficult, both in their diagnosis and treatment. In all chronic disorders the condition of the intestinal canal is of great importance, on account of its function of absorbing the nutriment from the system. Any undue action of the muscular coat hurries forward the contents before they can be taken into the circulation, whilst an imperfect contraction produces, by sympathy, a sluggish motion of the stomach and duodenum. The muscular action of the intestines may be increased, producing diarrhœa, or it may be abnormally slow, giving rise to constipation.

DIARRHŒA.

By diarrhœa we understand frequent and copious evacuations from the bowels, with or without griping, but without tenesmus. For the purposes of prognosis and treatment we must distinguish between the acute and chronic forms of the disease.

Prognosis.—Acute diarrhœa usually arises—1. From nervous irritation. 2. From fermentation, excited by undigested food. 3. From an abnormal state of the secretions of the digestive canal or of some of the glands opening into it. 4. From catarrh of the mucous surface produced by other causes. It commonly subsides as soon as the cause which has excited it has been removed, but it may prove dangerous either in young or in very old persons, or in those who have been weakened by other diseases.

The prognosis is more grave in chronic than in acute diarrhœa. It accompanies ulceration of the intestines, whether this arises from catarrh, or from tubercular or cancerous growths; it is a symptom of typhoid fever, and of lardaceous and other constitutional diseases. In all these the prospect of recovery depends rather on the malady with which the diarrhœa is associated than on the symptom itself. The frequent evacuation of the bowels, however, tends to enfeeble the patient, partly by the drain of fluid from the vascular system, and partly by hurrying the food through the canal before absorption is effected.

Treatment of acute diarrhœa.—Diarrhœa from nervous irritation is more often met with in private than in hospital practice. The patient is liable to purging, coming on suddenly and attended with little or no griping. The stools are feculent, not of an acid character, and unmixed with mucus. Although an attack usually subsides quickly, it is annoying from the frequency and irregularity of its occurrence. Females or young persons of either sex are chiefly liable to it, or it may occur at any age in individuals of a nervous temperament, or in such as are weakened by some chronic malady. The purging may be excited by very trivial circumstances, such as mental agitation, over-fatigue, hot liquids, or slight changes in diet. A small dose of opium (a quarter or half a grain) or of chlorodyne, or of morphia and hydrocyanic acid, will generally ward off a threatened attack.

Tonic treatment is required to overcome the tendency to the complaint. Where there is anæmia a course of iron will be of service; the tincture of sesquichloride (F. 36) being the most useful preparation; in others the phosphate, sulphate (F. 45), or valerianate of zinc will be more successful. Where anæmia is not present you will generally find a course of dilute nitric acid (F. 30), with a few drops of the tincture of opium, with or without cinchona, calumba, or nux vomica, of value. The bowels in many cases become constipated when tonics are given. This must be obviated by the mildest aperients, such as tincture of rhubarb, the compound powder of rhubarb, or a small dose of castor oil.

Diarrhœa most frequently arises from fermentation of the food. Under ordinary circumstances the gastric juice is neutralised, in its passage through the intestines, by the secretions poured into the canal; but where an excessive amount of acid is produced by fermentation it does not undergo this change, and therefore sets up irritation of the mucous membrane. The stools are frequent, have an acid reaction and sour smell, and are sometimes frothy when allowed to stand. There is almost always considerable griping, on account of the irregular muscular contractions.

The first point is to ascertain if the muscular contractions have sufficed to remove the source of irritation, for if such is not the case you must assist the effort of nature by an aperient. You ascertain the necessity for this by observing whether the stools are small in quantity, feculent, and mixed with solid or knotty lumps, if there is much fœtor, and if there are frequent and ineffectual efforts to empty the bowels. When any of these signs are present you may give a dose of calomel, with or without opium, followed by castor oil, or you may prescribe castor oil and laudanum, or a draught of the tincture or compound powder of rhubarb (F. 119). In children you prescribe calomel alone, as opium is not so well borne by them as by adults.

But where you have no evidence of the retention of decomposing materials you prescribe medicines to neutralise the acid of the intestinal contents. Chalk answers best, and it is on account of this being the most common form of the complaint that the Mistura Cretæ is so generally regarded as a specific for diarrhœa. When the stools are watery and acid, and the complaint resists chalk or the alkalies, carbolic acid (F. 219) or creasote (F. 221) will be found valuable.

Bilious diarrhœa is much more rare than the preceding form of the complaint. It occurs chiefly in the summer and autumn. The stools are dark, not acid, and often scald the anus in their passage. Chalk and alkalies are of no use; on the contrary, they tend to increase the mischief. Acids are the most effective remedies, and a few doses often at once relieve the purging. The dilute sulphuric acid (F. 8) is usually preferred, and may be given along with laudanum and chloroform.

Where either of the preceding varieties of diarrhœa has persisted for a day or two, the circulation of the mucous membrane is apt to become enfeebled, and a watery evacuation replaces that which was before acid or alkaline. Astringents are then required, of which you may use the dilute sulphuric acid, logwood (F. 5), kino, or catechu, with or without opium. Where the discharge is very watery acetate of lead and opium are to be preferred. At the same time some form of stimulant, such as brandy, will be found useful.

In all the above varieties of diarrhœa you must confine your patient, if the case is a severe one, to liquid food, milk, arrowroot, sago, or cornflour, being most suitable. Meat broths are apt to purge, unless mixed with farinaceous food. Fruit, vegetables, and wines, from their tendency to fermentation, generally increase the complaint.

Slight catarrh of the mucous membrane is probably always present in the preceding forms of diarrhœa, but it disappears as soon as the irritation is removed. When it arises from intestinal catarrh alone it is distinguished by the pain of the abdomen being more continuous than in the preceding forms, and being accompanied by tenderness on pressure. The pulse is quickened, the temperature of the skin a little raised towards evening; the patient complains of thirst, loss of appetite, and debility; the tongue is red at the tip, and often rather dry; the stools are watery and mixed with mucus. The treatment here must be directed, not against the purging which is only a symptom, but for the relief of the inflammation of the mucous membrane which produces it.

Treatment of chronic diarrhœa.—This is generally very difficult, and often unsatisfactory. You will have to watch your case carefully, because attacks of subacute catarrh not unfrequently occur, and require an alteration in the treatment during their continuance.

When a case is submitted to you, first ascertain if there be any disease of the rectum. Cancer of this part gives rise to frequent passages of blood and mucus, which are not uncommonly looked upon by the patient as diarrhœa, when in reality there is constipation. If there be no stricture of the rectum or colon, ascertain the cause of the diarrhœa. It may be a symptom of diseased liver or kidneys, of lardaceous disease, of catarrhal, tubercular, or cancerous ulceration of the intestine, or it may be a dysenteric affection contracted in a tropical climate. It is generally unwise to check the purging in cirrhosis of the liver and chronic disease of the kidneys, and the same may be said of the diarrhœa of gouty subjects. You must therefore determine in each case whether it is advisable to stop it, by reference to the condition and strength of the patient.

As a general rule, chronic diarrhœa requires the use of astringents. In the slighter and more recent cases vegetable remedies answer best, such as logwood

(F· 4), tannic acid, or kino, or you may employ bismuth (F. 11). They are likewise most suitable for those in which there is a liability to attacks of acute or subacute catarrh. In the more chronic cases, especially where you suspect ulceration, you may prescribe with more advantage metallic salts, such as perchloride of iron (F. 36), sulphate of copper (F. 18), acetate of lead (F. 15), or nitrate of silver. In both instances you must employ opium to diminish the muscular irritability, which may be given either by the mouth, by enema, or in the form of a suppository. You will find great advantage from the use of a bandage of flannel to the abdomen, and where there is much pain the repeated application of small blisters over the tender parts is invaluable.

The patient should keep as much as possible in the recumbent posture, should not be restricted to a liquid diet, and must avoid vegetables, fruits, and wines. Where you have reason to believe the diarrhœa arises from an affection of the large intestine astringent enemata should be used. If scybala are detected in the evacuations small doses of tincture of rhubarb or of castor oil are indicated.

CHRONIC CONSTIPATION.

Treatment (p. 37).—The indications for the treatment of chronic constipation are the same as those for the relief of other muscular organs in a state of long-continued dilatation. Before, however, prescribing for such a case you should ascertain that there is no mechanical obstruction to the action of the bowels; thus it often arises from cancer of the rectum, gradually narrowing the passage. In the female, retroversion, or fibroid or other tumours of the uterus is not unfrequently the unsuspected cause of a difficulty in obtaining a free evacuation. Herniæ sometimes produce it by dragging down and displacing portions of the intestinal canal.

Next, ascertain by careful percussion and palpation if there is an accumulation of fæces in any part of the colon, and also observe if the abdominal muscles are very lax or incapable of due contraction. In the latter case an elastic bandage is necessary.

A. The first point in treatment is, of course, to remove the cause. Now, the normal stimuli to the muscular coat of the colon are—1. The undigested remains of the food. 2. The biliary and other secretions. 3. Muscular exercise of the body generally.

Most of the cases of obstinate constipation result from an improper diet. The use of large quantities of animal food, white bread, and of alcoholic beverages, is apt to produce constipation, on account of the small amount of insoluble materials they contain. In many instances the substitution of brown or rye bread, or of oatmeal porridge for white bread, is sufficient to relieve the troublesome symptoms under which the patients have so long laboured. In others green vegetables, treacle, stewed prunes, figs, apples, and other fruits are effective remedies. When there is much debility you may often with advantage order porter or bitter ale.

When, along with constipation, you find the tongue yellow, the complexion sallow, and the stools pale and fetid, you should attempt to remove it by increasing the flow of bile. You may accomplish this by the use of podophyllin (F. 148), leptandrin, taraxacum (F. 117), and other remedies of the same kind. A piece of rhubarb, chewed in the mouth every morning, is useful in the same way.

Regular exercise in the open air is necessary to promote the action of the bowels in all cases of constipation, and this is especially requisite for persons following sedentary pursuits.

H. Before beginning your treatment of constipation you should first clear the bowels from all accumulations, so as to permit the muscular coat to contract as far as it is capable of doing. For such a purpose you may prescribe castor oil, or pills of calomel (F. 145), or Pil. Hydrarg. (F. 143), combined with the compound extract of colocynth or rhubarb pill; or you may give repeated doses of sulphate of magnesia or sulphate of soda, along with carbonate of magnesia (F. 135). It is a mistake to leave off the aperients before they have completely cleared the bowels. You should continue their use as long as the evacuations are lumpy or knotty and until they have regained their normal colour.

You must persist in the employment of some mild aperient after all accumulation has been removed, or the weakness of the muscular coat will permit the intestine again to become distended. For this purpose ascertain which part of the bowels is most liable to dilate. If it be the cæcum or ascending colon, aperients that stimulate secretion, such as senna (F. 121), sulphur (F. 123), castor oil, or mineral waters, as those of Friedrichshall or Carlsbad, are the most efficacious. When the descending colon or rectum is in fault you must employ aloes, and may combine it with extract of belladonna or nux vomica (F. 138).

It is of no use trusting to aperients alone to overcome chronic constipation. They should be combined with tonics, and the relative doses of each must be varied from time to time. Where there is anæmia you add iron, and if the appetite is bad some bitter may be used. In other cases zinc is preferable, especially when there is feebleness of the nervous system. If the cæcum or ascending part of the colon be in fault nux vomica has a good effect; or, if there be any objection to its use, beberia or cinchona may be employed.

Where the cæcum is the chief seat of the obstruction careful shampooing every morning is often of service, especially if the abdominal muscles are feeble. In other instances the galvanic current stimulates the muscular coat and keeps up its nutrition. In all cases the patient should accustom the bowels to act at the same hour each day.

NEURALGIA OF THE INTESTINES.

Pains of a neuralgic character affecting the abdomen are very often met with. They most commonly result from the irritation produced by renal or biliary calculi, but in some instances they are caused by the pressure of an abdominal aneurism or a tumour of some other kind. Although idiopathic neuralgia occasionally presents itself, you should never be satisfied that a severe pain arises from this cause until you have made a most searching examination of all the organs contained in the abdominal cavity.

COLIC.

Spasmodic affections of the colon are very frequent, and are often attended with considerable difficulty in diagnosis and treatment. The pain of colic seems in most cases to arise from violent efforts of the muscular coat of the large intestine to expel some irritating material. This may be an accumulation of fæces or flatus, or some biliary, or other secretion. The chief predisposing causes are:—1. An undue excitability of the nervous system, which renders the patient liable to spasmodic attacks of different kinds. 2. The effects of lead, and perhaps of other mineral substances, in paralysing the muscular coat of the intestines. 3. There is a form of colic, purely neuralgic, which occurs in persons who have lived for a long time in hot climates and have suffered from malaria.

Prognosis.—Colic rarely terminates fatally, except the patient is very feeble and generally out of health. It must, however, be borne in mind that occasionally it is followed by peritonitis, and thus indirectly places the patient's life in jeopardy.

Treatment during an attack (p. 29).—A. In all cases ascertain that the patient is not suffering from strangulated hernia. Your first aim must be to remove any exciting cause, such as a fecal or flatulent accumulation. When you suspect the former you may, in slight cases, prescribe a dose of castor oil and laudanum; or, if there be much vomiting, calomel and opium, followed by an aperient draught (F. 135) four hours afterwards. If there should be any objection to aperients given by the mouth, a turpentine and castor-oil enema may be used, and may be repeated, if necessary, until it acts freely. In gouty and other subjects, in whom you have reason to believe that flatulence is the exciting cause, you should use an enema, with or without turpentine, or assafœtida, and, at the same time, prescribe magnesia, along with ether, chloroform, or peppermint (F. 213). In a case of purely neuralgic character, where the patient has suffered from malaria, quinine in large doses will be of more service than aperients.

C. Your main hope of affording relief must be in the exhibition of sedatives. An aperient often fails to act unless it is mixed with opium. As a general rule, the subcutaneous injection of morphia or of atropia is the quickest way of removing the pain. In other cases, a draught containing morphia or tincture of belladonna, along with ether or chloroform (F. 64), will be found sufficient, and should be frequently repeated until the pain is relieved. In very severe cases you may have to administer chloroform or ether by inhalation, but the spasm not unfrequently returns as soon as the patient's consciousness is restored.

Whenever it is practicable you should employ the hot bath or hot hip bath, followed by fomentations or poultices and an anodyne, such as opium or belladonna, may be added to the water used to foment with. Dr. Graves recommended in severe cases a solution of tobacco, as a fomentation, but this is rarely required.

D. There is almost always great restlessness, so that it is difficult to keep the patient quiet. This should, however, be insisted upon, and he should remain upon the back, with the knees well supported.

Prevention of colic (p. 39). — **A.** You should attempt to ascertain, in each case, the exciting cause of the attacks. In some they follow the use of indigestible articles of food, such as cucumber, salads, or mushrooms; in others they seem to arise from exposure to wet or cold; more rarely from bodily fatigue or extreme mental exertion. Where the absorption of lead has given rise to the complaint you should impress upon the patient the necessity of always washing his hands before eating, and in bad cases he ought to give up his employment. The state of the bowels must be always carefully watched, and a free action maintained until the evacuations have acquired a healthy appearance. The rules for the treatment of chronic constipation should be followed, for in most cases an insufficient action of the intestines is the immediate cause of the attack. When the patient has suffered from malaria you must keep him for a length of time on quinine or arsenic, or on both combined.

F. All articles of food likely to produce constipation or dyspepsia should be prohibited. Persons of a gouty habit ought to abstain, as much as possible, from fermented liquors, and especially from ale and porter, and the chief meal should be taken in the middle of the day.

Circumstances tending to enfeeble the digestive process must be avoided. Thus, inquiry should be made as to the existence of excessive menstrual discharge, leucorrhœa, or prolonged suckling in females, and in males as to the occurrence of bleeding from piles. The patient must be cautioned against excessive bodily or mental exertion.

Persons of a gouty habit should employ the Turkish or warm baths habitually, and carefully attend to their clothing. In all cases advantage will be derived from the use of a flannel bandage to the abdomen, so as to maintain the skin of this part of the body at a uniform temperature.

H. There are few cases in which you are not required to lessen the undue excitability of the nervous system by the use of tonics. If anæmia is present iron must be prescribed, with or without bitters, according to the state of the appetite. When there seems no deficiency of blood, preparations of zinc may be used, such as the sulphate, phosphate, or valerianate (F. 70). Arsenic (F. 104) is most useful where chronic intestinal catarrh is also present. If the appetite is defective you may trust to cinchona, beberia, calumba, gentian, or some other bitter. Exercise in the open air is necessary, and the use of cold sea bathing or of shower baths will tend still further to invigorate the nervous system.

HEMORRHAGE FROM THE INTESTINES.

This is not an unfrequent accident, and when profuse it is attended with great danger to life. This is partly due to the fact that it is often allowed to go on for some time before it is discovered.

Treatment (p. 26).—**A.** You will sometimes find considerable difficulty in determining the source of the bleeding. It must be remembered that a pitchy appearance of the stools, indicating hemorrhage, and unaccompanied by vomiting of blood, occasionally occurs in gastric ulcer. It is still more common in ulcer of the duodenum, and when you have reason to suspect this lesion your prognosis must be cautious, because perforation of the peritoneum is more apt to occur in ulcers of this than of any other part of the gastro-intestinal tract. Where the blood appears unmixed with, or only forming a coating to, the stools you may surmise that it has proceeded from the rectum or sigmoid flexure. You must, therefore, most carefully examine these parts with the finger and the speculum for piles, stricture, and cancerous growths. Hemorrhage is apt to occur in typhoid fever, and more rarely in tubercular ulcerations, the ulcerations being generally situated at the lower end of the small intestines.

B. In severe cases you may apply bladders of ice or ice-cold compresses to the abdomen, or may inject cold water into the rectum. These measures must be employed with caution where the temperature has been much lowered or the heart depressed, as often occurs in typhoid fever. They are best fitted for hemorrhage from ulcers of the stomach or duodenum. You employ astringent medicine, such as gallic acid (F. 1), mineral acids (F. 9), infusion of roses, acetate of lead (F. 15), or alum. In most cases the subcutaneous injection of ergotine is of service.

Where there is much depression you will have to give stimulants, such as brandy, ammonia, or ether, either by the mouth or rectum. If this is not advisable you may inject brandy (half a drachm) subcutaneously. In extreme cases transfusion of blood may be necessary. Many practitioners employ turpentine (F. 7), which acts as a stimulant to the heart, and at the same time tends to check the hemorrhage.

D. Whenever you have reason to suspect that the bleeding has come from the intestines, or when it is to any dangerous amount, you must insist upon perfect rest in bed.' You should prescribe a liquid diet, such as milk, beef tea, and farinaceous food, all of which are to be taken cold. It is generally advisable to give opium, to check the action of the muscular coat of the intestines, but the doses must not be sufficient to depress the heart's power.

SECTION II.

ACUTE DISEASES OF THE INTESTINES.

CATARRH OF THE INTESTINES.

Prognosis.—This occurs both in an acute and a chronic form, the latter being often a consequence of the former. When acute, the termination is usually favorable in adults, excepting in old persons. It is exceedingly dangerous in young children, and usually occurs during the period of dentition or weaning.

Chronic catarrh more frequently affects the large than the small intestine. When accompanied by ulceration it may cause death, either by perforation or through exhaustion. Both the acute and the chronic form are apt to accompany diseases of the heart, liver, and kidneys, and under such circumstances they prove dangerous to life by depressing the patient's strength.

Treatment of acute intestinal catarrh (p. 23).—A. The first question is whether the free evacuation of the bowels, which accompanies the disease, has sufficed to carry away all undigested or irritating food that may have produced the attack. If the stools are mixed with knots or lumps, or are very offensive and feculent, it is probable that the cause remains, and you must remove it by means of aperients. For this purpose you may prescribe the tincture or compound powder of rhubarb or castor oil, with or without the addition of tincture of opium, according to the amount of pain. In children, one or two grains of calomel forms the best aperient; and in adults, if there be much irritability of the stomach, you may give three grains of calomel and one grain of opium, followed by an enema or a dose of castor oil. Where you can trace the attack to cold, a warm bath, or a warm foot bath, is generally useful in restoring the circulation.

B. If the attack is attended by collapse you may prescribe brandy, ammonia, or ether (F. 51). Small quantities of brandy are generally of use to relieve griping. In severe cases you should order the patient to be wrapped up in blankets, with hot bottles to his feet, to restore the circulation.

As soon as the stools become watery and the griping lessens, and if there be no tenderness on pressure, you should have recourse to astringents, so as to check the escape of fluid from the relaxed membrane. For this purpose you employ acetate of lead, logwood, or tannic acid, with or without opium. Where the disease has lasted for some days, and recurrence of the diarrhœa takes place, bismuth (F. 12) is the most effective remedy. Whenever there is any tenderness on pressure, a large hot bran or linseed-meal poultice should be kept constantly applied to the abdomen.

D. In severe cases the patient must be confined to bed; in slighter attacks it will be necessary to guard against exposure to wet and cold. You should always insist upon physiological rest, by restricting him to small and frequent meals of liquid food, such as milk, arrowroot, cornflour, &c. Beef tea had better be avoided, on account of its tendency to act upon the bowels. You should also afford rest to the muscular coat by means of opium. When the stomach is irritable the subcutaneous injection of morphia may be employed; in other cases the compound powder of ipecacuanha (F. 80) is more useful. If there be much straining an opiate enema should be used.

TYPHLITIS.

Prognosis.—So long as the cæcum is the only part inflamed the prognosis is favorable. Fatal cases occur from ulcers perforating the peritoneum, or producing suppuration in the neighbouring connective tissue. When recovery takes place the tumour is often slow in disappearing, and occasionally chronic catarrh of the cæcum or colon is left. Ulceration of the appendix is attended with greater danger than that of the cæcum, as perforation readily occurs in this part. Catarrh of the appendix often, however, ends in recovery without producing symptoms of sufficient severity to attract the attention of the patient. Perityphlitis is always dangerous to life, on account of its tendency to end in suppuration. The pus may point externally, or may burst into the peritoneum or into one of the neighbouring portions of intestine.

Treatment (p. 23).—**A.** As typhlitis is usually the result of a feculent accumulation it would seem that there must be a conflict between two of the chief principles in the treatment of inflammation, viz. that of removing the cause, and that of leaving the inflamed part at rest. Where the tumour is very tender, and the adjoining parts of the abdomen are also sensitive to pressure, when the pulse is quick and the temperature much increased, you had better avoid aperients, because, in all probability, peritonitis is present. But when the tumour is not tender, the pulse soft and quiet, and the temperature normal, you may try to remove the irritating accumulation by medicines. These should, however, be of the mildest description, such as castor oil or enemata of water, all irritating drugs, such as aloes or colocynth, being avoided.

B. Where there is much tenderness, and the patient is young and healthy, you had better apply six or eight leeches to the tumour, and repeat them if necessary. Let the whole abdomen be enveloped in a large hot poultice, or covered by a piece of spongio-piline. If the pain is severe these may be sprinkled over, either with a teaspoonful of laudanum, or with equal parts of tincture of opium and tincture of belladonna.

C. On account of the pain you must use opium. The compound ipecacuanha powder is a useful preparation, but you may also give tincture of opium or morphia. The doses should be repeated every four or six hours, according to the amount of suffering.

D. In all cases insist on perfect rest. Let the body be raised and the knees bent and supported by pillows. Confine the patient to a liquid diet, such as beef tea, milk, and farinaceous food, in order that as little feculent material as possible may be formed.

G. Where the complaint threatens to become chronic the frequent application of small blisters is of use, but if there is much thickening about the intestine the iodine liniment will be found more efficacious. In case of suppuration of the connective tissue hot poultices and fomentations must be applied, and an opening should be made as soon as the pus seems to approach towards the surface. At the same time you must support the patient's strength with soup, broth, milk, wine, &c. You may also prescribe quinine (F. 32), acids (F. 27), or other tonics.

The accidents you are called upon to treat are—perforation of the peritoneum, constipation after recovery, diarrhœa from catarrh affecting the cæcum or colon, and, occasionally, hemorrhage.

INTESTINAL OBSTRUCTION.

The prognosis and treatment of these cases so entirely depend upon their diagnosis that it will be necessary to make a few remarks upon this point.

The causes of obstruction of the bowels may be—

1. The strangulation of a portion of the gut by bands, &c. 2. Twisting of the intestine. 3. Intussusception. 4. Narrowing of the calibre of the bowel by external pressure, or embarrassment of its motion by adhesions. 5. Stricture of the walls of the gut.

6. Blocking up of the passage by fæces or other solid bodies.

When you are called to a case of intestinal obstruction you must first examine for hernia. See that there is no protrusion at any of the abdominal openings, and remember that a very small knuckle of intestine, when incarcerated, is capable of stopping the motions of the whole canal. Next see that it is not a case of peritonitis. This is the most common error, and it is in many cases difficult to avoid. Peritonitis from perforation closely resembles some cases of intestinal obstruction, in the suddenness of its onset, and in the vomiting and obstinate constipation that accompany it. In peritonitis, however, the pain is the prominent symptom from the first, there is general and intense tenderness and distension of the abdomen, and the pulse is small and rapid; when it arises from perforation there is generally a previous history of gastric or intestinal ulceration to assist your diagnosis.

The most difficult case is when the peritoneal inflammation has arisen from ulceration of the appendix, for then you have often no previous symptoms of ill health. There is, however, usually fulness or great tenderness in the right iliac region.

If you can satisfy yourself there is neither hernia nor peritonitis you next examine the rectum, in order to ascertain if there be any feculent accumulation or stricture in that part.

Where you have failed by these means to discover the cause, you must try to ascertain whether the small or the large intestine is the seat of the obstruction. This requires care, for it is always a matter of great difficulty. If the small intestine be the part affected the pain is usually severe, the vomiting comes on early and is urgent, the urine is scanty, and the progress of the case rapid. When the large intestine is the seat of the mischief the pain is less severe, the vomiting not so urgent, the urine is in sufficient quantity, and the progress slow. In the former the umbilical and hypogastric regions are chiefly distended, and the lumbar regions are not very tympanitic on percussion; in the latter the chief distension is in the hypochondriac, lumbar, or epigastric regions, according to the seat of the obstruction. When you have made up your mind as to the part of the intestinal canal that is affected, you must remember that the obstruction may arise either from an acute or a chronic condition. In the acute the symptoms occur without previous warning; in the chronic they are preceded by evidences of disordered digestion.

In the small intestine the causes of acute obstruction are, in the order of their rarity—1. The impaction of a gall-stone or other foreign body.. 2. Twisting of the gut. 3. Intussusception. 4. Internal strangulation.

Gall-stones almost always present themselves, when of sufficient size to block up the intestine, in females of middle age, and there is a history of jaundice, and pain of the right hypochondrium, or of febrile attacks attended with tenderness over the gall-bladder. Twisting of the small intestine is rare, and the symptoms are very acute; it usually occurs in young people, and comes on without any apparent cause. Intussusception of the small intestine is most common in children. The pain is of a griping character, attended by the passing of blood or mucus, and a careful examination will generally detect a tumour in the abdomen. Internal strangulation is the most probable cause, if you are able to eliminate the foregoing more rare conditions. It usually takes place in young persons, and often follows a sudden strain or violent exertion.

The chronic causes of obstruction in the small intestine are—1. Intussusception. 2. Adhesion of the coils of intestine or the pressure of tumours.

Chronic intussusception is rare; it occurs chiefly in young adults. A tumour can be usually distinguished in the abdomen, which is movable, and often becomes hard under the pressure of the finger. The diagnosis of contraction must be made from the history of the case, as, for example, from the previous occurrence of local or general peritonitis. Tumours can be generally distinguished by careful examination.

In the large intestine the acute conditions capable of causing obstruction are—1. Intussusception. 2. Twisting of the bowel.

Intussusception is seldom met with excepting in children; the symptoms come on suddenly, there is a bloody or mucous discharge from the bowels, and a tumour can be generally felt externally or by the rectum. Twisting of the large intestine usually occurs in old people; the symptoms are acute, and the cæcum and sigmoid flexure are the parts commonly affected.

The chronic conditions are almost always stricture, or the pressure of a tumour. Here the history of a gradually increasing constipation, with the results of a careful examination, will usually direct you to a correct opinion.

Prognosis.—No case of intestinal obstruction is devoid of imminent danger, for even a feculent accumulation may give rise to peritonitis, or set up perforating ulceration. On the other hand, no case is necessarily fatal, for even in a malignant stricture the stoppage may be the result of the occlusion of the bowel by some hard or indigestible substance that may be removed by art or by the muscular action. The danger depends, not only upon the age and general health of the individual, but also on the nature of the impediment to the evacuation of the bowels.

The impaction of a gall-stone is always exceedingly dangerous. The concretion must be of considerable size to obstruct the intestine, whilst its hard and unyielding nature prevents its being readily forced onwards by muscular action.

Twisting, either of the large or small intestine, is a very fatal accident. Even when the colon is the seat of the mischief the symptoms are severe and the progress rapid. Sometimes, however, they are relieved spontaneously, when the condition of the patient is such as to lead us to expect only a fatal termination.

Intussusception is exceedingly dangerous, both on account of the age at which it usually occurs and from the nature of the accident. When seen at an early period it is frequently capable of being relieved by art; in other cases sloughing takes place, and a portion of the bowel is passed by the rectum. The danger in internal strangulation varies according to conditions which we are unable clinically to distinguish, as, for example, with the position and tightness of the constricting band. In chronic cases the chance of recovery depends upon the nature of the obstructing cause, as well as upon the degree to which the intestine is still capable of performing its functions. Cancerous stricture, for example, is more certainly fatal than embarrassment produced by adhesions of the peritoneum.

Treatment.—When you have ascertained that the obstruction arises from hernia, peritonitis, or malposition or tumour of the uterus, you must treat the patient accordingly. But where none of these conditions are present you should ascertain if there is any impaction of fæces in the large intestine. If such is the case you should attempt their removal by enemata of warm water or of barley water, with or without the admixture of castor oil or turpentine. Where the accumulation seems to be hard and difficult of solution, enemata of olive or linseed oil are useful. When the rectum is the seat of the obstruction you may often remove it by means of the shank of an iron spoon, or me such instrument. Never trust the enemata to a nurse, but in all dangerous cases take the trouble of administering them yourself. The patient should lie on his right side, or, where you suspect twisting of the intestine, he may rest upon his hands and knees, whilst the fluid is slowly and patiently injected.

The treatment of intussusception is chiefly mechanical. Where there is ileo-cæcal invagination the passage of a long bougie up to the site of the obstruction, and its firm pressure against the part, will sometimes suffice to reduce it. Others recommend large injections of warm water, but these are rarely of much use. The employment of air, thrown up by a pair of bellows or a pump, has been more successful, and merits a fair trial. This should, however, be restricted to recent cases, for if the symptoms have lasted many days, or there be signs of peritonitis or of gangrene of the gut, any mechanical interference is attended with danger. The patient should be placed under chloroform or ether during the attempts at reduction.

In chronic cases the abdomen has been laid open and the intestines successfully disentangled, but such an operation is, of course, very dangerous, and in advising an operation you must bear in mind the chance there is of spontaneous separation of the affected part.

In all cases of intestinal obstruction purgatives are at first employed, but as soon as it becomes evident that there is a mechanical cause these must be given up. The older physicians were in the habit of prescribing large quantities of mercury, in the hope that it would force a passage by its weight, but this measure is generally abandoned. The practice now adopted is to keep the patient under the influence of narcotics, so that the muscular action of the intestines may be allayed. Opium is best suited for this purpose, and the greater the pain and the more violent the symptoms the more necessary is its early and decided employment. If vomiting is a prominent symptom you may inject subcutaneously one quarter of a grain of morphia, repeating the dose so as to keep the patient under its influence. The same remedy may be administered in the shape of pills or tincture. Where the pain is less severe one quarter or half a grain of the extract of belladonna may be given every four hours, or one sixtieth of a grain of atropia may be used subcutaneously, and repeated until the physiological effects of the drug are produced. I have known an enema of the infusion of tobacco succeed in removing obstruction when all other treatment had failed; but it should be used with caution, as it is apt to produce dangerous or even fatal collapse.

Various operations have been performed where the symptoms have persisted in spite of medical treatment. Whenever a stricture of the rectum or colon is incapable of being relieved by dilatation or enemata, colotomy is required, as you can reach the large intestine without injuring the peritoneum. But the greater risk and the difficulty of exact diagnosis in obstruction of the small intestines render an opening into them a much more doubtful proceeding. In some cases the abdomen has been opened, and the cause of the obstruction sought out and relieved, whilst in others the operator has contented himself with dividing the abdominal parietes and opening any distended coil of intestine that first presented itself; thus giving relief without seeking to ascertain the cause of the obstruction. Others have aspirated, or passed a fine trocar into a portion of the overloaded bowel, so as to lessen the tension, without running the risk of laying bare the peritoneum.

SECTION III.

CHRONIC DISEASES OF THE INTESTINES.

CHRONIC INTESTINAL CATARRH.

Treatment (p. 32).—**A.** In children, improper feeding is one of the chief causes of the complaint, and the diet must be therefore carefully regulated. In some, meat and vegetables pass through the digestive canal unaltered, and it is necessary to keep the patient entirely to milk and farinaceous food. In adults, constipation is a common cause, and this must be obviated according to the rules laid down for that condition. In obstinate cases, in which ulcerations seem to coexist, it is necessary to restrict the patient to a diet of milk, farinaceous food, eggs, and animal broths.

F. In children, when the complaint has followed an attack of acute catarrh, or when the food is passing through the canal in an undigested state, pepsin and small doses of dilute hydrochloric acid are of great value. Where there is anæmia, without fever, you may have recourse to cod-liver oil, steel wine, or Parrish's chemical food. If the iron is not well borne, the lacto-phosphate of lime or the hypophosphite of soda or lime may be used. In adults you employ iron where there is anæmia; but if the appetite is bad, you should also prescribe cinchona (F. 29), beberia, quinine (F. 32), or some other bitter.

H. In the choice of aperients you must remember that even small doses of these drugs often gripe and act violently. Be, therefore, cautious about prescribing aloes, podophyllin, or colocynth, and seek to effect your object by castor oil, olive oil, or aperient enemata. The abdomen should be maintained at an equable temperature by means of a flannel bandage, and the whole body carefully defended from wet and cold.

SECTION IV.

Animal Parasites.

The treatment of intestinal worms includes their expulsion and the prevention of their recurrence. Before, however, prescribing any of the irritating drugs generally employed as anthelmintics, you must satisfy yourself that your patient is really suffering from worms. Particles of food, pieces of muscular fibre, of connective tissue, and of vegetable matters, that have escaped digestion, are often wrongly regarded as evidences of the presence of parasites.

In the treatment you must not only select such drugs as are likely to destroy the worms, you must also take care that the portion of intestine they inhabit is at the same time empty, so that the medicines may come into contact with them.

Cestoda or Tapeworms.

Prognosis.—Although capable of affording great annoyance and of affecting the general health by causing irritation of the intestines, these never produce death. There is often great difficulty in expelling the parasite, only a part of it coming away. Where this is the case it will be necessary for you to vary your drugs, for sometimes one will prove effectual after others have failed. Where due care is taken you will seldom, if ever, meet with a case that is incapable of cure.

Treatment.—Let the patient fast, or take only liquid food, for twelve hours before commencing the treatment. Generally, you first prescribe a dose of calomel and extract of colocynth (F. 145), castor oil, or some other aperient, so as to empty the intestinal canal. Early on the following morning the vermifuge may be given, and, unless there is excessive purging, it should be followed four hours afterwards by another aperient dose, such as castor oil or the compound senna mixture.

The liquid extract of male fern (F. 218) is generally used. It may be given in doses varying from fifteen to sixty minims, according to the age of the patient, and may be suspended in milk, or mucilage and cinnamon water. If necessary, the dose may be repeated a week afterwards.

Cusso (F. 216) is usually given as an infusion; the powder being swallowed along with the liquid. Heller recommends it in a compressed form enclosed in a gelatin capsule.

The bark of the pomegranate root is a favourite remedy with some practitioners. It is given as a decoction, but it is unpleasant to the taste, and often produces violent griping.

The kamala is employed by some in doses of sixty to one hundred and twenty grains, suspended in gruel, mucilage, or treacle. It should be followed by a purgative.

The oil of turpentine used to be employed in doses of one to four drachms, but it is less efficacious than the medicines before mentioned.

The evacuations should be carefully searched after each dose of any of these drugs, to ascertain if the head of the worm has been expelled. Unless this is found you cannot be sure that the patient is cured. The evacuations are to be mixed with water and put aside for ten minutes, so as to allow the parasite to settle to the bottom. The water is then poured off and fresh added, until every fragment is inspected. The head is very small, and the finest joints are situated nearest to it. Where you are unable to find the head, if no joints are again passed within two months, it is probable the patient is cured.

To prevent a recurrence the patient should be careful to avoid meat that has been only smoked, or that is imperfectly cooked.

NEMATODA OR ROUND WORMS.

The *Ascaris lumbricoides* is most commonly found in children, and is destroyed more readily than the tapeworm. Various dyspeptic and nervous symptoms are commonly ascribed to the irritation produced by it when it is present in the intestinal canal.

Treatment. — Santonine (F. 217) is the most useful drug for destroying the round worm. You may prescribe an aperient of jalap or jalap and scammony the day previously, but in most cases this is unnecessary. The santonine may be taken at bedtime or early in the morning, in doses varying from two to six grains, according to the age of the patient, and should be followed by an aperient. Three doses are usually sufficient. Küchenmeister recommends that two to four grains of santonine be dissolved in one ounce of castor oil, and one teaspoonful should be taken every four hours, until it acts briskly on the bowels.

Turpentine was formerly employed in doses varying from one to four drachms. It was administered along with castor oil, but it is less efficacious and more nauseous than the santonine.

There is still great doubt as to the manner in which the ova of this worm find an entrance into the digestive canal; but the precautions most likely to be useful, in order to prevent its recurrence, are the use of filtered water, of vegetables and fruit thoroughly cooked, and attention to the general health. In many cases a course of steel and cod-liver oil seems more efficacious than the vermifuge medicines so generally employed.

OXYURIS VERMICULARIS, THREADWORM.

This parasite is most often met with in children, but is not confined to them. In the case of adults there is often difficulty in overcoming the complaint, the worms making their appearance again as soon as the person liable to them gets out of health.

Treatment.—As these worms generally inhabit the large intestine it is the custom to attempt their expulsion by means of enemata. These may be used daily, and may contain common salt (one teaspoonful to one pint of water), lime water, perchloride of iron, quassia, or some other bitter infusion. Others have given an enema containing santonine with good effect. As, however, the worms are not confined to the large intestine, you will find it necessary, in obstinate cases, to give medicines by the mouth, in order to eradicate them. Iron, quinine, strychnia, cod-liver oil, and other tonics, are in most cases invaluable. At other times a course of tonic and aperient medicines, such as sulphate of iron and sulphate of magnesia, will be found to answer. Where they have been associated with obstinate constipation an electuary of guaiacum and sulphur often succeeds. To destroy the ova of the worm an ointment of mercury, such as the Unguentum Hydrargyri Ammoniati may be smeared round the anus night and morning.

CHAPTER X.

DISEASES OF THE PERITONEUM.

SECTION I.

ACUTE DISEASES OF THE PERITONEUM.

ACUTE PERITONITIS.

THE diagnosis of peritonitis is often more difficult than you would imagine, for the symptoms may be but slightly marked. It seldom occurs idiopathically, but is usually the result of disease of one of the abdominal organs, perforation of the stomach or intestines by ulceration, or some general disorder, as pyæmia or diseased kidneys.

Prognosis.—Acute general peritonitis is always attended with imminent danger to life. Where it arises from perforation the case is almost hopeless, although a few instances of recovery are on record. It must be remembered that colic and other abdominal disorders are sometimes accompanied by collapse, so that you must not put down a case presenting sudden and severe pain of the abdomen with great depression as necessarily indicating perforation. Death may occur in twelve hours, and life is rarely prolonged above two or three days. Peritonitis arising from kidney disease and pyæmia is usually, though not always, fatal. Puerperal peritonitis, although very dangerous, is more hopeful than the other forms of the complaint above mentioned. The prognosis of *local peritonitis* is chiefly determined by its extent and the nature of the disease which has given rise to it.

Treatment (p. 23).—**A.** It has been proposed, where perforation of the stomach has occurred shortly after a full meal, that the organ should be emptied of its contents by means of the stomach-pump, so as to prevent any further escape of food into the peritoneum. Unfortunately, patients who have suffered from this accident are usually in such a state of collapse that such an operation is out of the question.

B. Most authors agree in recommending venesection where it can be borne, and where the patient is seen at an early stage. The chief indication is the state of the arterial system, a small wiry pulse being regarded as especially requiring it, and it is said that as the blood flows it becomes fuller and softer. It is, however, comparatively rare to meet this condition, most of the cases of general peritonitis being asthenic from the first, and the pulse being small, feeble, and compressible. Where general blood-letting can be safely practised, it is generally necessary to follow it by the application of a number of leeches to the abdomen, or, if the advisability of venesection is doubtful, the leeches may be used alone. In all cases hot fomentations or poultices should be employed. Sometimes the weight of a poultice increases the suffering, and you may then substitute hot and wet flannels covered with oil silk. Some practitioners prefer the use of ice-cold cloths to the abdomen, and they are most useful when the temperature is very high. In *partial peritonitis*, unless the state of the pulse forbid it, you will almost always give relief by leeches and poultices or hot fomentations.

In the early stage of asthenic peritonitis, such as occurs from perforation or puerperal affections, stimulants are required to overcome the collapse. In cases arising from perforation you must avoid giving any remedies by the mouth, lest they should find their way into the peritoneum. It is better to administer them subcutaneously, or by enema. In local peritonitis stimulants are rarely necessary, unless failure of the heart should manifest itself.

D. In all cases the most perfect rest must be maintained. The patient should be placed in the recumbent position, with the legs slightly raised, the bed-clothes supported, and even the exertion of talking must be avoided. If it is necessary to change his posture he must not be allowed to give any assistance, but the most absolute quiet of the abdominal muscles should be enforced. In very severe cases no food should be allowed, but a few pieces of ice may be sucked from time to time to alleviate thirst. In those that are less acute the diet should be restricted to small quantities of milk, barley water, or farinaceous food. No purgatives should be given, and only after the active symptoms have entirely subsided you may have recourse to an enema of warm water.

In order still more to restrain the action of the stomach and intestines, as well as to relieve the pain, opium ought to be given freely. For an adult you may order one or two grains for the first dose, and repeat one grain every three or four hours. In cases of perforation morphia may be used subcutaneously, and must be regularly repeated, so as to keep the patient under its influence, but where there are diseased kidneys opium ought to be used with great caution. In partial peritonitis opium, along with rest, forms the main treatment, although the amount and frequency of the doses may be lessened.

G. As a general rule, the exudation is absorbed as soon as the inflammation subsides. Where this does not occur, in the case of children a course of iodide of iron and cod-liver oil, along with rest and a carefully regulated diet, is generally sufficient to absorb the fluid, but in adults the process may be more tedious and difficult. You may, in the first instance, try the effect of diuretics, such as digitalis (F. 161) or acetate or acid tartrate of potash (F. 159) If these fail you may have recourse to perchloride of mercury (F. 106) or iodide of potash (F. 111). In local peritonitis you will often require to employ blisters, or the external application of iodine, to promote the absorption of the effused products.

SECTION II.

CHRONIC DISEASES OF THE PERITONEUM.

CHRONIC GENERAL PERITONITIS.

Prognosis.—Chronic peritonitis occasionally follows the acute form, but it is usually the result of a tubercular or cancerous affection of the serous membrane. Cancerous peritonitis is a hopeless disease, and you can only look forward to a fatal termination. There is a form of this complaint which may readily mislead you. It begins with occasional griping pains of the abdomen, unattended by fever and the ordinary signs of peritonitis. The pains gradually increase in frequency and severity, and the peritoneum eventually becomes distended with fluid. After death the whole of the serous membrane is found to be covered with small cancerous nodules of the size and appearance of miliary tubercles. Tubercular peritonitis is almost always fatal, but some cases are recorded of children, where, even after suppuration had occurred and the pus had burst through the navel, recovery had taken place.

Treatment (p. 32).—During the whole progress of chronic peritonitis the patient is liable to attacks of acute or subacute inflammation, attended with an increase of pain and tenderness and with an elevation of the temperature of the body. Under such circumstances you must attempt to relieve the symptoms, as in acute inflammation, by means of rest in the recumbent position, opium, poultices, and, if necessary, with leeches. In the intervals of the acute attacks the treatment must be in conformity with the general principles laid down for chronic inflammations.

F. The diet should consist of nutritious, but readily digestible, food. Liquid nourishment ought to be preferred, such as beef tea, veal and mutton broths, milk and farinaceous food, because it is necessary that the enfeebled muscular coat of the intestines should be embarrassed with as little feculent matter as possible. In most cases a certain quantity of alcoholic stimulant is useful.

In cancer small doses of iron, such as the saccharated carbonate or the citrate (F. 37), are useful. Where the appetite is defective you may combine iron with quinine, calumba, or some other bitter. In tubercular peritonitis the syrup of iodide of iron along with cod-liver oil is valuable. Where, however, there is a tendency to diarrhœa, from the coexistence of ulceration of the mucous membrane of the intestines, the oil must be used with caution.

The action of the bowels generally requires to be regulated. All severe purgatives should be avoided, and, if aperients are necessary, you may prescribe enemata of warm water, confection of senna, compound rhubarb powder, or the compound liquorice powder. The more active aperients are apt to irritate, and to increase the peritonitis by the stimulus they give to the muscular coat of the intestines.

G. When suppuration has taken place, as often happens in tubercular peritonitis, you had better avoid an opening as long as possible, so as to afford time for the pus to become enclosed by the adhesion of the neighbouring coils of intestine.

Pain is the chief symptom you are called upon to treat. Here opium, subcutaneously, epidermically, or by the mouth, or enema, will be constantly required. In cancer, chloral combined with bromide of potash (F. 99) often answers as well as or better than morphia.

CHAPTER XI.

DISEASES OF THE LIVER.

As a congested state of the liver is one of the most common conditions we meet with, we have to consider by what means the hepatic circulation may be quickened. Bodily exercise is the most important of these, as the flow of blood through the liver is greatly assisted by the general excitement of the vascular system resulting from muscular motion. In addition to this the more rapid action of the diaphragm, consequent on exercise, assists in propelling forward the sluggish streams of blood through the portal veins.

The selection of an appropriate diet is of great value as a means of relieving congestion of the liver. It should be sparing in quantity, so that no great excess of nutriment may enter the portal system during digestion. Articles composed of starch, or containing much fat or oil, tend to increase the functional activity of the liver, and thereby determine to it an increased quantity of blood. Alcohol, for the same reason, should, as a general rule, be prohibited, and, where its use seems desirable, it should be given well diluted and in small quantities. A moderate amount of lean animal food, or of fish, together with green vegetables and fruit, forms the best diet for persons suffering from hepatic congestion.

The most important drugs that act on the liver are saline purgatives, mercury, podophyllin, leptandrin, taraxacum, and inspissated ox-gall.

All active purgatives probably tend to relieve hepatic congestion by draining off a quantity of serum from the portal system. The saline aperients, such as the sulphates of magnesia and soda, and the purgative mineral waters of Friedrichshall, Pulna, and Carlsbad, are very useful for this purpose.

Various drugs are supposed to quicken the hepatic circulation by increasing the excretion of bile. Of these the preparations of mercury are the most efficacious. They are to be preferred to other cholagogues where the patient presents the symptoms of acute or chronic gastric catarrh, or when the evacuations are fetid or of a pale colour. In acute cases calomel, in doses of two to five grains, followed, if necessary, by a saline aperient, is best suited; for more chronic cases you may use blue pill or the compound calomel pill, repeated as often as seems desirable. Mercury should not be given except for very urgent reasons in disease of the kidneys, or when the patient is feeble or anæmic. Podophyllin or leptandrin is better fitted for cases of chronic hepatic congestion, where it is necessary to keep up the action of the liver for a considerable length of time. Inspissated ox-gall is employed, usually in combination with other aperients, where long-standing constipation appears to be connected with an imperfect secretion of bile. The dilute mineral acids, rhubarb, and taraxacum are usually preferred where defective biliary secretion is attended by an atonic condition of the stomach and intestinal canal. They are of comparatively little value in cases of hepatic congestion associated with gastric catarrh.

In chronic hepatic congestion, especially when the disease has been contracted in tropical climates, the nitro-hydrochloric acid may be employed externally. Eight ounces of the dilute nitro-hydrochloric acid of the 'Pharmacopœia' should be added to one gallon of water at 96°. When it is desirable to use the acid locally a flannel bandage wet with this, and wrung out until it is only damp, should be applied round the abdomen and covered externally with oil silk. It may be worn constantly and reapplied night and morning, unless much irritation of the skin be produced, when it should be worn only for a few hours at a time. In some cases it is more useful to employ the acid as a footbath or as a general bath two or three times a week.

SECTION I.

MORBID STATES NOT NECESSARILY DEPENDENT ON ORGANIC DISEASE.

A complete abolition of the secreting power of the liver is met with in acute atrophy and some other disorders, and is named "Acholia." It is characterised by delirium, increased rapidity of the pulse, alteration in the temperature of the body, and hemorrhage from the mucous membranes. It usually terminates fatally. The urine contains tyrosine and leucine, which partially or entirely replace the urea and uric acid. As, however, this condition seems only to occur along with extensive disorganisation of the liver, we have no means either of prevention or of cure, but are obliged to content ourselves with treating such symptoms as seem to be most pressing.

JAUNDICE.

Whenever there is an obstruction to the free egress of bile from the liver, absorption occurs and jaundice is produced. Yellowness of the skin and other tissues, although to a smaller extent, accompanies various febrile affections, such as acute atrophy of the liver, pyæmia, &c. With respect to the latter class of diseases, the prognosis and treatment of the jaundice depend entirely upon the nature of the malady, of which it is only a symptom. Consequently, we must here confine our attention to jaundice arising from obstruction.

Prognosis.—The prospect of recovery is dependent chiefly on the nature of the condition that has produced the jaundice. The catarrhal form generally lasts from ten to twenty days, and ends in recovery, although it is not unfrequently followed by obstinate dyspepsia. This is more particularly the case when repeated attacks have taken place, because the obstruction of the duct is often produced by chronic inflammation of the mucous membrane of the duodenum. Jaundice arising from gall-stones is not unfrequently of only a few days' duration, commencing during or immediately after the passing of a calculus, and subsiding as soon as the catarrh excited by the irritation has had time to disappear. The gall-duct may, however, be permanently, or for a long period, obstructed, either by a calculus becoming impacted, or by thickening resulting from the inflammation. Recovery may occur even after twelve or eighteen months of partial jaundice, but generally in very chronic cases atrophy of the hepatic structure results, and death is the consequence. When the duct has become partially, or entirely, closed by cancer of the pancreas, enlarged lymphatic glands, or by other growths, the case always terminates fatally, although its duration varies according to the seat and nature of the disease.

If the cause producing the complaint is obscure, it will be useful to bear in mind that the prognosis is generally favorable in the young, doubtful when the patient is of middle age, and unfavorable in advanced life, because malignant tumours are more apt to occur at the latter period. Females are more generally the subjects of biliary calculi than men, and are, therefore, more liable to the curable forms of the disease. You must bear in mind that fever is rarely an accompaniment of uncomplicated jaundice. If, therefore, you find any considerable and continuous elevation of temperature, you should suspect some complication, such as hepatitis, perihepatitis, or abscess of the liver, ducts, or gall-bladder, and you must be consequently cautious in your prognosis.

Treatment.—Where the jaundice is the result of cancerous or other growths compressing the ducts, the treatment must be directed to relieve the primary malady. If it is caused, as is generally the case, by catarrh of the ducts or duodenum, or arises from the irritation of a calculus, the principles of treatment are the same as those required for catarrhal inflammation of any other mucous membrane (p. 23).

A. It is seldom you can remove the cause, excepting where a mass of hardened fæces is pressing upon and obstructing the duct. In such a case a dose of calomel and extract of colocynth (F. 145), followed by a saline aperient, will often suffice to remove the complaint in a few days.

B. Where there is much tenderness on pressure over the gall-bladder or ducts you will hasten the recovery by the application of six or eight leeches, followed by poultices and fomentations. Remember, however, that jaundiced patients bleed more freely than others, and you should, therefore, give directions how to arrest the hemorrhage in case this should be necessary. If the tenderness be slight you may employ dry cupping, or content yourself with the constant application of poultices. The bowels are usually confined, and you may prescribe saline aperients, such as the sulphate and carbonate of magnesia (F. 135). By this means you also lessen the congestion of the liver and its ducts.

C. The pain is seldom severe in catarrhal cases, but if this should be so there is no objection to the use of small doses of morphia, either by the mouth or subcutaneously.

D. When the case is recent and severe you should confine the patient to the bed or sofa; at the same time all undue excitement of the liver must be prevented, and alcoholic beverages, coffee, cocoa, and food containing much fat or starch, should be forbidden. The most suitable diet consists of beef tea, chicken or other animal broths, milk, and raw or cooked fruits. When the complaint persists more than two weeks solid food may be allowed.

G. When the jaundice has continued for more than two or three weeks it is reasonable to suppose that the tubes are choked with adherent mucus, or that their muscular coat has become enfeebled from inaction. You should, therefore, stimulate the liver to increased secretion. The nitro-hydrochloric acid is the most useful means for effecting this object. It may be prescribed along with a saline aperient, or its action assisted by podophyllin, leptandrin, or mercury; or it may be used externally by means of a bandage applied around the abdomen or as a bath. When you suspect thickening of the duct to be taking place blisters should be employed, and the perchloride (F. 106) or the iodide of mercury may be given internally. In either of the above cases you must prescribe a more stimulating diet.

Itching of the skin often precedes jaundice, but in other cases it is present during the whole course of the disease. It is always difficult to relieve, but usually a warm alkaline bath soothes the irritation, whilst acid baths increase it. In other cases you may employ a liniment containing oil, lime water and hydrocyanic acid, or some other sedative liniment. In old people the itching is sometimes so obstinate that relief is only to be obtained by the use of a flesh brush every night. It is better to give some sedative, such as chloral, at bedtime, rather than permit the patient to suffer from want of sleep for a length of time.

The yellowness often remains in the skin long after the stools present evidence of a free egress of bile into the duodenum, and patients are apt to be dissatisfied if you make no attempt to remove the colour. The skin and the kidneys are the chief eliminators of bile from the system. You will find the former best stimulated by vapour baths and baths of bicarbonate of soda, whilst the urinary secretion may be augmented by alkaline diuretics, such as the acetate of potash, which may be combined with spirit of nitre and decoction of scoparium (F. 159).

A tendency to hemorrhage is probably always present. In recent cases you will generally discover a few small ecchymoses over the abdomen, and in chronic jaundice there is often severe bleeding from the gums, nose, or other mucous membranes. Be careful to ascertain the exact spot from which the bleeding proceeds, for local applications are much more useful than medicines given by the mouth. A solution of perchloride of iron, tannic acid, or turpentine, will often quickly arrest the hemorrhage, if applied to the affected part, when styptics given internally are without avail.

HEPATIC NEURALGIA.

The liver is not endowed with much sensibility, and consequently most of the pains referred to its neighbourhood arise from inflammation of the peritoneum, or from an affection of some other organ situated near it. Pain and tenderness in the right hypochondriac and epigastric regions are not unfrequently produced by the irritation of hydatid and other tumours. In other cases the gall-bladder seems to be the seat of suffering. More commonly pain in this part of the abdomen is caused by an accumulation in, or some other abnormal condition of, the colon. Do not forget, however, that the pleurisy attending phthisis may produce pain referred to the under surface of the hypochondrium, and that considerable tenderness on pressure often accompanies it. In all probability the tenderness is caused by the pressing upwards of the liver against the inflamed pleura that covers the upper surface of the diaphragm. Pain in the back of the hypochondriac region may arise from spinal disease, pleurisy, herpes zoster, or from irritation of the gall-bladder or right kidney.

SECTION II.

ACUTE DISEASES OF THE LIVER.

ACUTE YELLOW ATROPHY.

Prognosis.—Although this affection is most common in pregnant females, it is not confined to them. It may even attack children, but this is rare. It is almost always fatal, ending usually within one week from the first appearance of the delirium. The average duration of a number of cases is said to have been five days, but it has in some instances caused death in thirty-six hours.

Treatment.—Various methods of treatment have been recommended. Some have employed emetics or saline purgatives, whilst others have relied on the internal use of acids. The almost uniform fatality of the disease is a sufficient proof that none of these methods of treatment are of much value. It will be better, as we are ignorant of the causes producing the complaint, to follow the ordinary indications for the treatment of febrile disorders.

A. If the bowels have been much constipated it will be well to follow the advice given by some authors of acting on the portal system by saline aperients. When this has not been the case purgatives are not likely to be of benefit.

B. As the pulse is always weak and compressible, it is not wise to lessen the amount of blood. On the contrary, most cases require alcohol or ether, in addition to frequent doses of bark or quinine, combined with acids (F. 32).

C. You should not use sedatives unnecessarily, as the delirium results from the imperfect excretion of the products of decomposition, and opium tends to increase their retention in the system. If the heat of the skin should be excessive, which is not usually the case, cold sponging may be employed, and the amount of quinine increased.

D. The state of the patient necessitates perfect rest in bed. The delirium is usually of a low, muttering character. Pure air should be freely admitted into the room, which must be maintained at a moderate temperature.

The chief complications are obstinate vomiting and hemorrhage from various mucous membranes. The vomiting arises from the implication of the nervous system, and is best treated by ice, hydrocyanic acid administered in an effervescent mixture (F. 171), and the application of a mustard poultice over the pit of the stomach. You must combat the hemorrhage as in other cases of jaundice.

ABSCESS OF THE LIVER.

Prognosis.—The probability of recovery depends greatly on the cause of the disease. When it arises from pyæmia or suppuration of the gall-ducts, the patient rarely survives, as there are numerous abscesses scattered through the organ, and the whole system is affected by the absorption of pus. Although hepatic abscess is usually an acute affection cases sometimes live for many weeks or even months. Recovery from this form of hepatic abscess has been recorded, but such a fortunate termination is rare.

The prognosis of the tropical form is more favorable, as in most of the cases that occur in this country the pus has become encysted. In addition to this, there is generally only a single abscess, which may be evacuated, and recovery may ensue.

The condition of the walls of the abscess is best discovered by an examination of the pus removed by the trocar. If large fragments of liver or connective tissue are present, it will be sufficient to mix it with distilled water, when the heavier particles can be removed with a pipette as fast as they subside. In other cases you may digest it for a few minutes with distilled water containing a few drops of ammonia. On this being poured into a conical glass, any fragments it may contain can be removed and examined with the microscope. If no particles can be detected, there is ground for believing that the contents of the abscess have been encysted. Where fragments are present you may estimate the danger of the case by noting their size and number. The abscess may, however, burst into one of the neighbouring organs, or through the parietes of the abdomen. Of thirty-nine cases of recovery collected by Rouis, seventeen burst through the abdominal or thoracic walls, fifteen opened into the bronchi, three into the stomach, and four into the colon.

Treatment (p. 23).—**A.** In pyæmia the treatment must be directed to the cause of the abscess, the hepatic suppuration being of secondary consequence. In tropical abscess you should carefully inquire into the state of the colon, as ulceration of its mucous membrane is a very common accompaniment or cause of the affection of the liver.

B. Where acute hepatitis has resulted from a direct injury you are advised to employ venesection or leeches. Such cases are, however, rare, and bleeding is out of the question with the rapid, compressible pulse of pyæmia or tropical abscess.

In tropical abscess if the patient is strong, and the pain excessive, a few leeches may be applied, but this is very rarely necessary. Mercury, which was formerly employed, is now universally condemned. The hepatic region should be kept covered with a large hot poultice, and dry cupping or sedative fomentations may be employed if the pain be severe.

It is generally necessary to support the action of the heart by means of alcohol, ammonia, or ether.

C. Sedatives are always required to relieve pain and procure sleep. Morphia may be given, either subcutaneously or by the mouth. The latter method of administration is to be preferred where there is diarrhœa.

D. Insist upon rest in bed. Usually the patient is too ill to sit up, but occasionally he is inclined to walk about after signs of suppuration have shown themselves.

G. The chief point in the treatment is the evacuation of the pus. You rarely can detect the abscesses in pyæmia on account of their small size. In tropical cases you must search, both in the epigastric region and on the sides of the chest and back, for any signs of suppuration. Press your fingers deeply between the ribs, and very carefully examine if any elasticity can be discovered. If so, enter the trocar of an aspirator at the suspected part. If the instrument is of small size no harm will be done by the puncture, even if it prove unsuccessful, whilst you may save the life of your patient by evacuating a collection of pus. You rarely succeed in emptying the cavity at once, because the liver is not capable of expansion like the lung. It is generally necessary, therefore, to repeat the operation from time to time.

E. In the intervals of tapping, or in any case where you suspect suppuration, you must support the strength of the patient by alcohol in various forms, soup, beef tea, jellies, milk and farinaceous food. Quinine, combined with acids (F. 32), forms the most useful tonic.

Congestion of the Liver.

Prognosis.—This may occur as an acute or chronic condition. The probability that the organ will be restored to its normal state is usually in proportion to the rapidity with which the enlargement has occurred. It is very rare that the patient dies from hepatic congestion, but, by its obstruction to the circulation through the gastro-intestinal membrane, it produces most of the cases of chronic gastric catarrh so common in medical practice.

The prospect of recovery in chronic cases is to be determined mainly by the cause producing it. Where, for instance, it has resulted from excess in eating or drinking it depends on whether the patient can refrain from his accustomed indulgence. In malarial cases the prognosis is usually favorable, if you can remove the patient to a dry and healthy climate. In heart disease it is an evidence that the right side is dilated, and that the case is approaching its final stage. In private practice, where great care can be bestowed, it is not unusual to find the liver enlarged for two or three years before general œdema occurs, but in hospital experience it is commonly a forerunner of general dropsy.

Treatment (p. 23).—Although congestion is different pathologically from inflammation, the indications are the same.

A. In most cases the line of treatment must depend on the cause of the disease. If malarial, give quinine freely, or, if this fails, arsenic (F. 105). Such persons usually require a moderate amount of alcohol with their food. When from diseased heart, and attended by dropsy and dyspnœa, you prescribe rest, along with digitalis and other diuretics (F. 162), but you will constantly find digitalis does not act until you add mercury to it (F. 167). This should be continued until the gums become sore, when the amount of urinary secretion often suddenly increases.

B. It is rarely necessary to use venesection. When it arises from over-indulgence in eating or drinking, leeches to the hypochondrium or to the anus are useful. The anus is to be preferred when there is a history of previous bleeding from piles. Where you cannot use leeches you may often employ dry cupping or sinapisms to the epigastrium with great benefit.

You can lessen the engorgement of the liver, either by draining some of the fluid parts of the blood from the portal veins by purgatives or by stimulating the secretion of the liver, and thus tapping the vessels whilst passing through the organ.

Hydragogue cathartics best effect the first of these objects. Friedrichshall and Pulna waters, or Carlsbad salts, are popular remedies for biliousness, which they remove in this way. You should restrict this method to young and plethoric persons, and do not continue it for any length of time without adding a stimulant or tonic to the saline. You effect the same object in persons of a more feeble state of health, and whose vascular system is less engorged by cholagogues. Thus, a few successive and moderate doses of calomel (F. 145), or blue pill (F. 142), followed by a saline aperient next morning, often produce less depression than a long course of the salines alone. If mercurials are not desirable you may prescribe podophyllin (F. 148), leptandrin, or taraxacum (F. 117). Perhaps the most generally useful of this class of drugs is a mixture of soda or potash along with rhubarb. In old people, especially where there is much constipation, an electuary of senna (F. 122), guaiacum, or sulphur, answers a similar purpose.

In very chronic cases, when the feebleness of your patient forbids the use of all active treatment, you may employ acid baths or bandages, or give acids internally (F. 26), along with a mild aperient.

D. In the acute form bodily rest is to be recommended. In chronic congestion, especially where it arises from indolence or indulgence in eating, regular exercise in the open air is essential. You may also promote the circulation through the liver by frictions with iodine and other stimulating substances.

E. The diet should be spare in quantity. Alcohol, coffee, spices, and other stimulants to the digestive organs must be prohibited, and the patient should not indulge in too frequent meals.

SECTION III.

Chronic Diseases of the Liver.

Cirrhosis.

As this disease ordinarily arises from the abuse of alcohol your chance of relieving the patient chiefly depends upon his power of abstaining from fermented liquors. Without this all your endeavours to cure him will prove fruitless.

In the first stage, that is, before dropsy has taken place, the symptoms are similar to those of chronic hepatic congestion, and there is usually a reasonable probability of a successful result. As soon as ascites has shown itself the chance of a favorable issue is greatly diminished, and the more rapidly the fluid increases the more imminent is the danger. Nevertheless, if there is no fever and no complication, you may in some cases afford relief, although the patient seldom, if ever, regains a perfect state of health.

Hæmatemesis is apt to occur before dropsy has shown itself. It is always a sign of ill-omen, as persons habituated to excess in alcohol bear the loss of blood badly. It is apt to recur from time to time, and therefore, however well the patient may have borne the first hemorrhage, you should watch him closely, and give a very cautious prognosis.

Treatment (p. 32).—Before the occurrence of ascites the treatment is precisely similar to that required for chronic congestion. In the first place, endeavour to put a complete stop to the habit of spirit-drinking. It is of little use to counsel moderation; you can do most good by resolutely insisting upon perfect abstinence from alcohol. If it is impossible to attain this object, you may allow some light wine, such as claret or hock, in moderate quantities.

In many cases the symptoms subside very slowly, and you may then with great benefit prescribe a prolonged course of iodide of potash (F. 111), with an occasional dose of blue pill (F. 143). This is more especially useful where you have reason to suspect the patient has suffered from syphilis.

After ascites has shown itself the indications are the same as those for other forms of dropsy (p. 35).

A. The cause of the exudation into the peritoneum is the gradual contraction of the lymph effused into the portal canals and the consequent embarrassment of the circulation. Put a stop, therefore, to all stimulants, especially to alcohol, which tends to increase the exudation around the portal veins. Mercury has been supposed to have a specific action upon the liver, and in the treatment of this form of dropsy it is invaluable. You may use blue pill, but I generally prefer the perchloride of mercury in solution (F. 106). It must be continued for weeks or months, according to the obstinacy of the case, and decisive results are seldom obtained until the gums become sore. As soon as this is observed you should diminish the dose, but persevere with its use until the ascites has entirely disappeared.

Perfect rest in bed is essential to success, in order to prevent any increased vascular action, and to save the strength of the patient. Keep him on liquid food, such as soups, beef tea, jellies, and milk.

F. In order to give time for the mercury to produce good results you must keep up a brisk action on the portal system. This is best effected by the compound powder of jalap, with or without the addition of gamboge (F. 149). The dose should be enough to produce two or three liquid evacuations daily at the commencement of the treatment, but a less amount of purging will suffice as the dropsy decreases. Where the urine is very scanty, or the heart dilated, you may add digitalis to the mercury.

G. It rarely happens that the action of purgatives is sufficient entirely to reduce the swelling. You must, therefore, resort to tapping, and repeat it as often as the breathing becomes difficult, or signs of œdema of the lungs present themselves. You should tap at an early stage, in order to prevent the fluid in the abdomen compressing the superficial veins which assist in maintaining a circuitous circulation of the venous blood. Use a flannel bandage as soon as the ascites seems fairly to have subsided, or you may support the abdomen by strapping.

One of the most troublesome accompaniments of cirrhosis is obstinate diarrhœa. Unless it greatly reduces the patient's strength you had better leave it alone; but if his pulse begins to fail you must employ opiate enemata, or astringents, such as logwood (F. 4), or acetate of lead (F. 14).

Hydatid Cysts.

Prognosis.—The prognosis varies greatly in different cases, according to the size and situation, as well as the number of cysts that may be present. For example, a single tumour, so placed as to be readily reached by operation, presents a fair chance of success, Those that have few or no daughter-cysts within them are also favorable cases. You may guess at the number of secondary cysts by comparing the amount of fluid you can remove by the trocar with the size of the swelling. Small, deeply-seated hydatids are more likely to undergo spontaneous degeneration and cure than those on the exterior of the organ. When the tumour bursts into the colon there is a more favorable prospect than when the rupture takes place into the lung or bronchial tubes. The bursting of a cyst into the pleura is attended with great danger, perforation of the pericardium or peritoneum is always rapidly fatal.

Treatment.—Various remedies have been recommended, such as common salt, iodide of potash, &c., in order to destroy the hydatids. They have, however, always failed to produce any effect upon the disease, and the only chance of relieving the patient is by a surgical operation.

The simplest procedure is to tap the cyst with an aspirator, by which the fluid contents are removed. Some recommend that the point of the trocar should be moved about in different directions, so as, if possible, to rupture the daughter-cysts. As soon as the liquid has ceased to flow you should, as you withdraw the trocar, press the abdominal walls over the part, so as to prevent any escape into the peritoneal sac. The abdomen must be then carefully bandaged, and a dose of morphia administered. The object of the operation is to kill the hydatids by the removal of the fluid in which they live, so that it is not necessary to empty the sac. There is often a rise of temperature for a few days after the operation, and the tumour becomes as large as before, but in successful cases the swelling gradually subsides.

Others have advised the injection through the canula of a solution of ox-gall or male fern, under the idea that, in this way, the vitality of the echinococci might be destroyed. In most cases the tapping alone is sufficient, although you will often have to repeat the operation.

In case of suppuration of a cyst, if the amount of pus is small, and it is not fetid, you may first try the effect of tapping. But where the pus shows signs of decomposition, or is in great quantity, you had better leave a large canula in the cyst, and inject either water or a weak solution of iodine or carbolic acid daily through it. Some practitioners have laid open the tumour with the knife, and completely evacuated the contents. This can only be safely effected where the surface of the sac has become attached by adhesions to the abdominal parietes. You can generally ascertain if this is the case by marking with ink the lowest border of the tumour, then making the patient draw a long breath, and observing if the border descends below the mark. If no alteration of its position is produced it is tolerably certain that it is fixed to the parietes of the abdomen.

The rupture of a hydatid cyst or of an hepatic abscess into any of the abdominal organs must be treated as other injuries of the parts affected.

In one case needles were passed into a hydatid cyst by Dr. Hilton Fagge and Mr. Durham, and a galvanic current directed through them. The current was allowed to pass from ten to twenty minutes at a time.

CANCER OF THE LIVER.

Prognosis.—Cancer of this organ affords no prospect of successful treatment. The progress of malignant disease is usually more rapid when it affects the liver than any other structure. This arises partly from the great rapidity of growth of hepatic cancer and partly because we almost always find a similar condition of some other of the digestive organs. Most of the cases terminate within nine or twelve months.

Treatment.—As soon as the diagnosis is certainly established you should give up all depressing medicines, such as iodine and mercury, and attempt, in every way in your power, to maintain the strength of the patient. In addition to good diet and a moderate allowance of alcohol you may prescribe iodide or phosphate of iron (F. 94), quinine (F. 37), or cinchona (F. 29). Some have advised liquor potassæ along with sarsaparilla, or a course of some bitter infusion. The chief part of the treatment must be necessarily palliative. You may attempt to relieve pain by morphia, given by the mouth or subcutaneously, or, if this fails, you may use hyoscyamus, belladonna, chloral, or bromide of potash (F. 99). In some cases relief from pain can be obtained by frequent small doses of chloral, even when morphia fails.

Vomiting, diarrhœa, and other symptoms, arising from a coexisting affection of the stomach or intestines, present themselves, but these must be combated according to the principles laid down for their treatment.

FATTY LIVER.

Prognosis.—In the majority of cases this affection is only an accompaniment of phthisis or some other wasting disorder, and, therefore, the probability of recovery depends upon that of the original malady. Where disease of the lungs is absent it is often associated with severe diarrhœa and general debility. Persons so affected may live for a considerable period with imperfect health, but are supposed by some practitioners to be especially liable to apoplexy.

Treatment.—When associated with phthisis or cancer the treatment of fatty liver is, of course, subordinate to that of the original disease. In cases of phthisis, some advise that cod-liver oil should not be given, but if the oil does not disagree, there can be no use in withholding so useful a remedy.

When fatty liver occurs independently of other diseases you must treat it on the same principles as those applied to other cases of fatty infiltration.

A. Avoid, as far as possible, all food likely to produce fat, for instance, whatever contains much fatty, saccharine, or starchy material, as well as alcohol, unless the latter is absolutely necessary. The diet should consist of lean meat, green vegetables, fish, and fruit. Regular exercise in the open air should be ordered, but it should not be so severe as to produce fatigue.

F. Regulate the digestive organs, either by means of alkalies (F. 211), or by acids (F. 27), and other tonics, as the state of the gastro-intestinal canal may seem to require. If anæmia is present iron is necessary. The bowels must be regulated by means of rhubarb, aloes, or senna, but all saline purgatives and other lowering remedies should be avoided.

Diarrhœa is the most troublesome symptom, and tends greatly to reduce the strength of the patient. Alkalies and absorbents are not of much use, for the mucous membrane of the gastro-intestinal tract is usually in a similar state of fatty degeneration to that of the liver. You should, therefore, use astringents. Acetate of lead (F. 15), oxide or nitrate of silver (F. 17), or sulphate of copper (F. 19), along with opium, are most useful where the purging is of long standing, or where you have had repeated attacks. In recent cases logwood (F. 4), krameria, kino, and catechu, with or without opium, are more beneficial than the metallic astringents.

LARDACEOUS DISEASE OF THE LIVER.

Prognosis.—As this is only a local expression of a wide-spread disorder of the system, the prognosis depends, not only on the amount of hepatic enlargement, but on the other circumstances of the case. It is more serious when it presents itself in conjunction with phthisis than after syphilis; and it is believed that the latter is the most curable form of the disease. The greater the number of organs affected the less favorable is the prognosis. If, for example, the liver, spleen, and kidneys are all implicated, you would look upon the case as more dangerous than where only one was attacked. The greater the rapidity with which the malady has increased the more serious is the aspect of the case, as the quick extension from one structure to another shows that the general health is greatly impaired. Cases are quoted in which the progress was so slow as to extend over many years, and some authors have affirmed that they have seen the enlargement of the liver gradually lessen and eventually disappear.

Treatment.—This must be conducted upon the same principles that guide us in the management of all chronic diseases.

A. In case any long standing suppuration is present, depending upon a diseased bone or joint, it is of the first importance that the local affection should be treated surgically. Where syphilis seems to have been the predisposing cause you should give the patient iodide of iron (F. 114), nitric acid (F. 30), sarsaparilla, or other such like remedies.

F. You seek to improve the condition of the blood, an alteration in the chemical or physical constitution of which is supposed to give rise to the lardaceous change. The food should be as nutritious as possible, and a moderate amount of alcohol is usually advisable.

You should first regulate the functions of the stomach and liver, if they appear to be disordered, and subsequently prescribe a prolonged course of tonics. Iron is the best, and may be given alone, or in combination with quinine (F. 37) or strychnia (F. 94). In other cases zinc (F. 45), or manganese, should be preferred, the former where there is anæmia and iron disagrees, the latter where an astringent is also required. If scrofula has shown itself, you may prescribe cod-liver oil, lacto-phosphate of lime and iron, or hypophosphite of soda. Potash in different forms has been tried, but hitherto without much success.

The excreting organ that usually requires most attention is the intestine. You should not reduce the patient's strength by saline purgatives, but effect your object by means of aloes (F. 138), rhubarb (F. 140), or senna (F. 131). If any exhausting discharge is present, such as leucorrhœa, or bleeding from piles, you should check it by appropriate means.

GALL-STONES.

Prognosis.—Notwithstanding the severe suffering produced by the passage of a gall-stone the prognosis is usually favorable. Occasionally death occurs from exhaustion, and in still more rare instances peritonitis is set up by ulceration of the distended gall-duct or gall-bladder, or the calculus may become impacted and incurable jaundice may result.

Treatment during the passage of a gall-stone (p. 29).—**A.** In order to encourage the passing of the calculus it was advised by Dr. Prout that the patient should drink large quantities of warm water, in which bicarbonate of soda was dissolved, in the proportion of one to two drachms to a pint. This seems the most feasible method of increasing the quantity of bile, and at the same time diminishing its consistency.

B. It is only in cases of extreme exhaustion that stimulants are required. You must not prescribe them simply because the pulse is weak, for the heart may be temporarily depressed by the nausea. But if the feebleness of the pulse persists, and the patient seems to remain exhausted, you may give ammonia (F. 51), brandy, or ether. Where the stomach rejects medicines you may order an enema, containing two or three tablespoonfuls of brandy in a pint of warm barley water.

C. Your main remedy is opium. This may be given along with ether or chloroform (F. 71), or, what is better, on account of the vomiting, one sixth or one quarter of a grain of morphia may be injected subcutaneously, and repeated every two or three hours, until relief is obtained. Where morphia fails belladonna sometimes proves successful, in doses of a quarter or half a grain of the extract or ten minims of the tincture, every three hours, or atropine may be used subcutaneously, in doses of one eightieth to one sixtieth of a grain. At the same time let your patient be placed in a warm bath for half an hour, and let this be repeated every three hours, keeping the abdomen covered, meanwhile, with a large hot poultice or hot fomentations. Bladders of ice have been recommended, but hot applications are more soothing.

Where severe inflammation of the gall-duct seems to follow the passage of a calculus, leeches may be employed; or, if the pain has persisted for some time, repeated blistering will be found of advantage in preventing the thickening that is apt to take place.

The vomiting arises from irritation, and must be combated by ice, hydrocyanic acid, and small doses of morphia. As soon as the pain has subsided it is advantageous to expedite the expulsion of the calculus by an aperient, such as calomel (F. 145), followed by a saline draught.

To prevent the formation of biliary calculi.—You must order a diet from which, as far as possible, fat, sugar, starch, and alcohol are excluded. Insist upon regular exercise in the open air. Frequent doses of bicarbonate of soda or potash are often of great use, but the most effective way of giving alkalies is by means of the waters of Carlsbad, Vichy, Ems, Marienbad, or Homburg, abroad, or Cheltenham, in this country.

CHAPTER XII.

DISEASES OF THE KIDNEYS.

THE quantity of urine secreted depends mainly upon the amount of pressure of the blood in the vessels of the glomeruli of the kidney. We consequently give liquids freely when we wish to increase the activity of these organs. Toast water or barley water is generally used, but distilled water is equally, if not more, effective.

The action of the skin is antagonistic to that of the urinary organs, the greater the amount of blood circulating through the integuments the smaller being the pressure in the renal arteries. In prescribing diuretics, therefore, this must be borne in mind, and the surface of the body should be kept cool. On the contrary, where you wish to lessen the determination of blood to the kidneys the use of hot baths is of primary importance.

The activity of the kidneys is also dependent on the amount of the excrementitious materials to be eliminated. As the quantity of urea is increased by animal and lessened by vegetable food, you might expect that, by a careful management of the diet, you would be able to regulate the renal functions. But in almost every case of congestion or inflammation of these organs, albumen is excreted from the blood; this produces anæmia, and, consequently, a nutritious diet is usually required to compensate for the increased waste.

Warm and vapour baths are employed for the treatment of renal diseases, both to keep up the action of the skin and also to remove any dropsical effusion that may be present. It is a good plan to let the patient enter the hot bath at about 98° or 100°, and then add more hot water, so as gradually to raise the heat to such a temperature as he can conveniently bear for a quarter of an hour. As soon as he is removed from the bath let him be packed in hot blankets for one or two hours, so as to encourage the sweating, after which he should be well dried and placed in a warm bed. In the vapour bath he is surrounded with blankets, and the steam is conveyed beneath them by a pipe connected with a boiler. In the houses of the poor an easy method of giving a vapour bath consists in placing the patient on a cane-bottomed chair, and covering him with blankets, which are firmly secured around his neck. At his feet a small tub of hot water is placed, into which a heated brick is dropped from time to time, so as to keep up the evolution of steam.

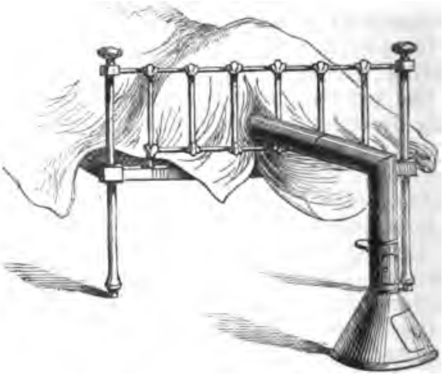

FIG. 9.

The most convenient form of hot-air bath for hospital use, is that here figured (Fig. 9). The air, heated in the receiver by means of a spirit lamp, is conveyed by a pipe beneath the bed-clothes, which are supported by an iron cradle. With such an apparatus the temperature may be maintained for any length of time you may think desirable.

You should be cautious in the use of hot baths whenever there is any congestion or œdema of the lungs. They are also contraindicated by a high temperature of the skin, and by urgent uræmic symptoms.

You can lessen the activity of the kidneys by medicines that act upon the skin or intestinal canal. It is with this view that diaphoretics and purgatives are employed in renal disorders. You can also increase the flow of urine by certain drugs. These are divided into three classes according to their action, and are known as hydragogue, refrigerant, and stimulating diuretics.

Hydragogue diuretics are employed to carry off dropsical accumulations. Digitalis, squill, scoparium, and spirit of nitrous ether, are included under this head. Digitalis is the most valuable of this class, and on account of its tonic action on the heart is chiefly used where dropsy has arisen from dilatation of that organ. But it is also of use in renal disease, especially in contracting kidney. It may be prescribed in acute renal inflammation, where the diminution of urine is not excessive, but it is of little or no use where the urine is very scanty or in chronic tubular disease. Squill is of no value in diseased kidneys, but is chiefly given where there is a deficiency of urine in chronic bronchitis, asthma, and other chest affections, in which its power of promoting expectoration is also requisite. Scoparium is often employed, along with squill and digitalis, in the dropsy of heart disease. The spirit of nitrous ether is usually given along with other diuretics.

The refrigerant diuretics include the various salts of potash. They are most beneficial where the urine is acid and high coloured as well as scanty. They are given in acute tubular nephritis, and whenever there is a deposit of lithic acid.

The stimulating diuretics are juniper, turpentine, cantharides, buchu, pareira, uva ursi, copaiba, and cubebs. None of these should be prescribed where acute inflammation of the kidney or urinary passages is present. Juniper is employed, along with other diuretics, in dropsy arising from disease of the heart or liver. The use of the others is restricted to cases of chronic or subacute inflammation of the pelvis of the kidney, or of the urinary passages.

SECTION I.

MORBID STATES NOT NECESSARILY DEPENDENT ON ANY SPECIAL ORGANIC DISEASE OF THE KIDNEYS.

Diseases of the kidneys are important, not only on ccount of their dangerous nature, but because they give rise to so many other disorders that often mask the symptoms of the original affection. It is necessary, therefore, whenever you are called to a serious case of any kind, to examine the urine before determining on your line of treatment. In addition to this, the renal secretion often affords a clue to the discovery of other maladies, the diagnosis of which would be otherwise doubtful. I may refer to the presence of leucine and tyrosine in cases of acute atrophy of the liver, and of sugar in diabetes, as illustrations of this. The condition of the urine has also been studied as a guide to the treatment of various kinds of dyspepsia. You cannot, therefore, fail to see the advantage of examining into the state of the kidneys in almost every important case that comes beneath your notice.

I need not say that the chief use of the kidneys is to eliminate a certain amount of water, as well as of the materials derived from the destruction of the tissues that is constantly taking place in the animal frame. When the excretion of the water alone is much diminished dropsy takes place; if the organic constituents of the urine are partially retained in the system, a state is produced to which the name of uræmia has been given, whilst a complete suppression of urine is known as anuria.

ANURIA.

This is fortunately a rare condition, but the symptoms connected with it are, at first, by no means so striking as might be expected. The patient may for a day or two make no complaint of pain, his appetite may remain tolerably good, and he may seem as if he had no serious illness. In many cases the anuria is not quite complete, and a little urine is passed at lengthened and irregular intervals, but it is very pale, watery, of low specific gravity, deficient in urea, and occasionally bloody and albuminous. The patient becomes restless, is unable to sleep, the tongue is brown and dry, and thirst is complained of. The sleeplessness is more decided as days go on, twitchings of the muscles show themselves, the pupils are contracted, and the breathing becomes slow and laboured. All this time the pulse is not rapid, and the temperature is but little, if at all, above the normal. The muscular twitchings increase, insomnia persists, slight delirium sets in, the patient becomes stupid and drowsy, and gradually sinks from exhaustion, or may die by coma. There is no urinous odour from the sweat or breath, as in retention of urine. Most of the cases die in from nine to eleven days, but a few are recorded to have recovered, even after complete suppression of urine has persisted for many days.

Anuria mostly arises from obstruction to the passage of the urine into the bladder, produced by cancerous or other growths compressing the ureters, or from a calculus becoming impacted in the ureter, where the opposite kidney has been previously in a state of atrophy. In some cases the calculus has been extremely small, so that the obstruction must have been partly of a spasmodic character.

In the acute nephritis of scarlatina you also have occasionally complete suppression of urine, but the symptoms of uræmia soon become developed, on account of the nervous system of children (in whom such cases usually occur) being much more excitable than that of adults, who are commonly the subjects of anuria.

Treatment.—Where anuria is produced by cancerous or other tumours of the bladder or uterus compressing the ureters, treatment is, of course, powerless to do good. If you have reason to suppose that a calculus in the ureter is obstructing the passage of the urine you must employ warm baths, inhalation of chloroform or ether, and large enemata of warm water. It has been proposed to use shampooing of the loins, and one case is quoted by Dr. Roberts, where free excretion of urine and ultimate recovery followed the use of this measure.

URÆMIA.

There is scarcely a structure in the body which may not present morbid changes, when death has occurred from uræmia. The serous membranes are frequently inflamed, and pleurisy, pericarditis, and peritonitis, are common results. The mucous membranes are equally liable to attack, and the bronchial and gastro-intestinal tracts often present the chief morbid appearances discoverable after death.

The symptoms of uræmia necessarily vary according to the organ which is chiefly affected. The more characteristic signs, however, are those furnished by disorders of the nervous system, although they generally produce death, without leaving any morbid condition which can be discovered by the anatomist. Thus, we see attacks of convulsions or coma, or both of these combined. Sometimes, without previous warning, the patient is seized with a fit resembling epilepsy; this may pass off without recurrence, or a succession of attacks may occur, the patient remaining partly or wholly unconscious during the intervals. In some instances cramps of the limbs present themselves, even at an early period of uræmia; whilst others suffer severely from neuralgic pains affecting different parts of the body.

Prognosis.—Uræmic inflammation of the serous membranes is always of serious import, and recovery is rare when the peritoneum or pericardium is affected. The pain in these cases is often slight, but the depression is more marked than in inflammation arising from other causes. The affections of the brain are attended with imminent danger, but in prognosis it is necessary to take into consideration the previous state of the patient's health and the amount and nature of the renal mischief, as well as the gravity of the cerebral symptoms.

Treatment.—Formerly venesection was practised in all cases of uræmic coma or convulsions, but when it is remembered that there is generally a coexisting condition of anæmia it becomes evident that such treatment must have been erroneous. It should be restricted to plethoric persons who have been attacked with acute affections of the kidney, as, for example, where young and healthy females are suffering from uræmia produced by acute nephritis arising from the pressure of the gravid uterus on the renal veins. In such cases many recommend, instead of general bloodletting, that cupping should be practised over the loins. When the patient is feeble and the attack has been sudden and the secretion of urine quickly suppressed, dry cupping over the loins, followed by hot poultices, may be employed.

Free purgation is most valuable, and should be used whenever bleeding is contraindicated. The compound jalap powder, or the sulphate and carbonate of magnesia in combination (F. 135), frequently repeated, are the most valuable aperients, but some recommend elaterium (F. 152), others croton oil.

Most authors agree in advising sedatives when uræmic convulsions present themselves, so as to lessen the excitability of the nervous structures. Inhalation of chloroform or ether is often employed; some prefer bromide of potash, chloral (F. 98), or morphia.

Frerichs, who supposed that uræmic symptoms resulted from the decomposition of urea in the blood into carbonate of ammonia, advised the internal use of a solution of chlorine, along with enemata of vinegar and water, or other vegetable acids. I have seen great benefit in the uræmic convulsions of children follow the administration of dilute sulphuric acid, in doses of half a drachm well diluted with water and repeated every three or four hours.

The neuralgic pains so frequently met with in uræmia are best relieved by tonics. The headache often subsides after the use of iron, quinine (F. 37), or strychnia (F. 94), assisted by the local employment of opium or belladonna.

The treatment of uræmic inflammation of the serous membranes must be conducted on the same general principles that regulate the management of a similar condition of these parts arising from other causes. Bloodletting can be very rarely borne, as the patient is already drained of albumen through the kidneys. Mercury is also inadmissible, moderate doses often producing severe ptyalism where the renal functions are imperfectly performed. Opium must be used with great caution, as small doses are apt to produce serious effects. Blisters have in some cases been found to increase the congestion of the kidneys. The chief means at our dis posal, therefore, are aperients and sudorifics. Repeated doses of sulphate and carbonate of magnesia (F. 136), the compound jalap powder, or other hydragogue cathartics, are best calculated to afford relief. Where these are inadmissible hot-air and vapour baths, assisted by the exhibition of acetate of ammonia and small doses of tartar emetic (F. 176), or other sudorifics, may be employed. The affected part should be covered either with fomentations or poultices, and the diet should be as digestible as possible.

In chronic cases of kidney disease, where vomiting is only occasional, the nitro-hydrochloric (F. 26) or phosphoric acid (F. 28), in a bitter infusion, generally answers best, because the secretions of the stomach are often alkaline from the presence of carbonate of ammonia, produced by the decomposition of urea.

Bronchitic and pulmonary inflammations must be combated by measures directed according to general principles. Occasionally, œdema of the glottis occurs in kidney disease, which should be treated with hot applications externally, the use of morsels of ice slowly swallowed, and, if the symptoms are urgent, by tracheotomy.

DROPSY.

The treatment of dropsy arising from an imperfect elimination by the kidney is of great importance. The opinions of practitioners differ, some recommending that the superfluous fluid should be removed by exciting the skin and intestines to increased action, whilst others urge the necessity of washing out the renal tubes by diuretics, so as to clear them of the epithelium collected in them.

In chronic cases you will usually find that diuretics are only useful where tubular nephritis has taken place in a contracting or lardaceous kidney, a large number of the tubes being in such cases unaffected. The more acute the case the less can we trust to the action of diuretics, more especially when life is threatened by a collection of fluid in the lungs or serous sacs. In some chronic cases diuretics are ineffectual until the vascular system has been depleted by puncturing the œdematous limbs or tapping the peritoneum or pleura. As regards the kind of diuretics, digitalis is most generally useful, especially where there is a tendency to diarrhœa. Along with it you may give acetate, citrate, or iodide of potash, or decoction of broom (F. 162). Where vomiting is produced by digitalis, taken internally, you may apply an infusion of the leaves, four times the strength of the infusion of the Pharmacopœia, to the loins upon spongio-piline. In chronic cases of renal dropsy, squill, tincture of cantharides, and juniper, have been employed, but they are seldom of much value and they often seem to irritate and thereby increase the amount of albumen in the urine. Rayer recommended the infusion of horseradish, and Dr. Harley the succus belladonnæ.

Diaphoretic medicines are of use in renal dropsy, chiefly by assisting the action of more active remedies. You should not trust to them alone when life is threatened by an accumulation of fluid in the serous sacs or in the lungs. In some cases diuretics, which had before failed, act copiously as soon as a free action of the skin has been established. The most useful diaphoretics are the hot-air and vapour baths, but in bad cases you had better have heated air conveyed into the bed, so as to avoid the necessity of disturbing the patient. In acute cases you may employ acetate of ammonia (F. 172), or citrate of potash (F. 170), or, if the pulse is good, jaborandi. Some advise the compound ipecacuanha powder, but in all chronic cases of renal disease you must prescribe opium with caution.

Whenever there is great and sudden congestion of the kidneys, manifested by a scanty secretion of urine loaded with albumen, or where life is threatened by a copious effusion into the large serous sacs, or into the pulmonary tissues, you should have recourse to hydragogue cathartics. The acid tartrate of potash is one of the best of these, either in the form of the compound jalap powder, or three drachms may be combined with fifteen or twenty grains of jalap. Dr. Christison recommended five to seven grains of gamboge with half a drachm of cream of tartar. If these fail you may use elaterium, either in a single dose of half a grain, or one sixth to one quarter of a grain, every three hours. During a long-continued course of cathartics you must be careful to support the strength of your patient by nutritious diet, and, if necessary, by alcohol.

Where you fail to remove a sufficient quantity of fluid, and the symptoms are urgent, you may find it necessary to have recourse to operative procedures. You ought never to do this without urgent reason, inasmuch as the cellular membrane and the serous sacs are very prone to inflame, when the excretion of the kidneys is lessened. Puncturing the skin of the legs should be performed with a needle, and the limbs should be afterwards covered with flannels wrung out of hot water. Some advise you to smear the skin with carbolized oil, whilst the fluid is in process of draining away.

ANÆMIA.

In all diseases of the kidneys you may expect, sooner or later, to encounter anæmia. This arises partly from the drain of albumen, partly from the derangement of the digestion, that so generally accompanies these complaints. Various remedies have been proposed to diminish the loss of albumen. Tannin, gallic acid, and alum has been given internally, but no great advantage has followed their use. Some patients seem to improve under the use of phosphate of manganese, which probably acts as an astringent. Whenever anæmia is a prominent symptom you will derive advantage from iron. The perchloride (F. 35) is the best preparation, and may be combined with acetate of ammonia or some other diaphoretic. If you wish to employ iron along with a diuretic, you may give the tincture of the acetate along with acetate of potash, or you may prescribe tartrate of iron along with acid tartrate of potash. Some object to the use of iron when there is much coexisting hypertrophy of the heart, and recommend the sulphate of zinc (F. 45), in doses varying from one to five grains.

The three chief conditions upon which you must keep your eye fixed in the treatment of kidney disease are uræmia, dropsy, and anæmia. According as the one or the other seems most threatening, you should direct your measures for its relief, no matter what other indications may be present, or what other kind of treatment you may have to adopt.

SECTION II.

ACUTE DISEASES OF THE KIDNEYS.

ACUTE NEPHRITIS.

This disease, when uncomplicated, is most generally met with in children as a consequence of scarlatina. It usually occurs within three weeks of the disappearance of the rash, so that the urine should always be carefully examined during this period, although no symptoms may be present. In adults its most common cause is exposure to wet or cold, and the dropsy presents itself very rapidly. Acute nephritis also takes place in those who are suffering from chronic kidney diseases. A person liable to gout, or who has been affected with albuminuria, will often be attacked with acute nephritis from time to time, such attack not only being dangerous in itself, but increasing the original mischief, and hurrying on the case to a fatal termination. Acute inflammation of the renal tubes, along with chronic alteration in the connective tissue of the kidneys, is one of the most common conditions for which patients of middle or advanced age are admitted into the wards.

Prognosis.—Frerichs reckons the recoveries from acute uncomplicated tubular nephritis at two thirds of the whole number attacked; but if we include all those who have albuminous urine after scarlatina the proportion of cures is very much larger. Recovery is more rapid and complete in the young than in those of middle age. The danger is generally in proportion to the diminution in the amount of urine, and Dr. West states that a suppression of urine beyond twelve hours in children is always fatal. Whenever the urine becomes scanty and loaded with blood and renal epithelium, you should look upon the case as a serious one. If pneumonia or œdema of the lungs or of the glottis occurs, the chances of recovery are but slight; pericarditis is almost always fatal. So long as albumen can be detected in the urine, even though no dropsy is present, your prognosis must be cautious.

Treatment (p. 23).—**B.** Venesection has been recommended in order to remove the renal congestion. In most cases of scarlatinal nephritis, the patient is already anæmic before serious symptoms show themselves, so that it is inapplicable. When the attack has been sudden, the diminution of urine very great, and the patient young and plethoric, you may with benefit draw blood, either from the arm, or, what is better, from the loins, by cupping In severe cases, where the person is feeble, dry cupping to the loins is often of great service, and should be frequently repeated. Always keep the back covered with a large linseed or linseed and mustard poultice.

When the more acute symptoms have subsided and albumen still persists in the urine, you will find it useful to prescribe iron, quinine, or other tonics. The iron is best given in the form of the tincture of the perchloride, and may, if a diuretic be thought advisable, be combined with digitalis (F. 39). Stimulating liniments rubbed over the loins are of use at this stage.

C. You do not require sedatives, excepting in case of uræmic convulsions. In children suffering from convulsions dilute sulphuric acid is often more useful than either chloroform or bromide of potash.

D. In every case of acute tubular nephritis, no matter whether it be uncomplicated or engrafted on chronic renal disease, you should insist upon perfect rest. Confine the patient to bed, so as to maintain the action of the skin; let the room be kept at an even temperature and carefully protect him from draughts of cold air. You may give physiological rest to the kidneys by stimulating the skin and intestinal canal to increased excretion. In dangerous cases you must rely on cathartics, and may prescribe sulphate and carbonate of magnesia (F. 135), or the compound powder of jalap, or, in extreme cases, elaterium (F. 152). When the symptoms are less threatening the use of hot baths or vapour baths will be sufficient. These ought not, however, to be employed if the temperature of the skin is high, or symptoms of uræmia are present. The action of the baths may be assisted by sudorifics, such as small doses of tartar emetic and acetate of ammonia (F. 176), or of citrate of potash (F. 170). This last salt is the most valuable, as it alkalizes the urine, and thus probably assists in the expulsion of the epithelium from the urinary tubes. Dr. Dickinson advises the free use of distilled water. In some cases digitalis is valuable, from acting as a diuretic, but it is chiefly so when the urine is not greatly diminished in quantity.

E. Milk is the best kind of food, and may be given freely. After a few days beef tea, or mutton or chicken broth may be added. Unless there be some special reason requiring it, alcohol had better be avoided.

PYELONEPHRITIS.

In most cases suppuration of the kidney is accompanied by inflammation of the mucous membrane of the pelvis, or is the result of pyæmia. Occasionally it follows an injury to the loins.

Prognosis.—When the suppuration of the kidney is a consequence of cystitis the symptoms are often very obscure. Under such circumstances it usually terminates fatally in from two to three weeks. Where it results from pyæmia the prognosis depends upon the severity of the original malady rather than on the renal affection. There is a more favorable prospect in cases following an injury, because, although the whole of the kidney may be destroyed by the inflammation, the opposite one may compensate for its loss by increased activity. Such cases are necessarily very dangerous, but they not unfrequently end in complete recovery.

Treatment (p. 23).—**A.** We can only derive advantage from attending to the cause where the renal inflammation results from cystitis. Here surgical treatment is everything, and the duty of the physician is only to attend to the strength of the patient, and to support it by quinine, mineral acids (F. 30), alcohol, and appropriate food.

B. You can employ local treatment when the inflammation results from an injury. If the patient be young and robust and the fever high you may cup or leech him over the loins, and in all cases you should apply hot fomentations and poultices, at the same time the tension of the circulation may be lessened by the administration of saline aperients.

As soon as suppuration seems to be fairly established and pus appears in the urine, you should support the strength of the patient by quinine, acids (F. 29), wine, and a nutritious diet.

C. You rarely require sedatives when the disease has arisen from cystitis, as the accompanying typhoid condition lessens the sensibility of the patient. In suppuration from accidents you should employ morphia subcutaneously or by the mouth, or may prescribe other sedatives in case opium seems to be contraindicated.

D. Whenever you suspect renal suppuration you must insist on the patient remaining in bed. In order to give physiological rest, stimulants and an excessive quantity of liquids should be forbidden.

G. Occasionally the pus finds an exit through the loins or one of the neighbouring organs. When it approaches the surface a free and early opening should be made.

PYELITIS.

Prognosis.—This disease may arise from stricture, cystitis, or inflammation of some other part of the urinary passages. Under such circumstances the prospect is more or less grave according to the probability of relieving the original cause of the mischief. Where it is produced by the irritation of a calculus the prognosis chiefly depends upon the likelihood of its escape from the kidney and upon the amount of inflammation it excites. In tubercular pyelitis the prospect is gloomy, as it is rare for the kidney to be the only organ implicated, and death generally results from phthisis.

Treatment of acute pyelitis (p. 23).—A. Where it arises from cystitis or stricture, the first and most important point is to afford relief to the original malady. When a calculus in the kidney is the exciting cause you should endeavour to ascertain its composition by repeated and careful examinations of the urine. If you have reason to suspect the stone to be formed of uric acid or oxalate of lime you must neutralise the urine by means of alkaline bicarbonates (F. 205), or citrate of potash (F. 170). If, on the contrary, you suspect it to be composed of phosphates you should prescribe mineral acids and tonics (F. 26).

B. Where the pain of the back is severe and accompanied by much tenderness, and the patient is otherwise healthy, you may give great relief by cupping or leeching the loins. In feeble subjects use dry cupping or sinapisms. In either case let the back be covered with a large, hot, linseed poultice, frequently changed, or let it be often fomented with hot water or some sedative lotion.

C. When there is severe pain you will have to use sedatives. You may either inject morphia subcutaneously, or, what is better, prescribe the compound ipecacuanha powder or some other sedative that has a tendency to act upon the skin.

D. Give rest by insisting that the patient should lay on a bed or couch, and avoid all exertion. You should relieve as far as possible the affected organs, by keeping up a gentle action on the bowels by means of some mild aperient, such as Carlsbad or Friedrichshall water, or the confection of senna (F. 123).

E. The diet should consist of liquids, such as milk, beef tea, barley water, or farinaceous food.

SECTION III.

CHRONIC DISEASES OF THE KIDNEYS.

CHRONIC BRIGHT'S DISEASE.

As all the varieties of this disease give rise to similar effects upon the constitution, and are attended with great danger to life, it will be convenient to consider them together.

Prognosis.—This is unfavorable in all the forms of chronic Bright's disease, as we know of no method by which an organ whose structure is gravely altered can be restored to its normal condition. The prospect, however, differs according to the nature of the malady. It is unfavorable in proportion to the duration of the complaint, and the effect it has had in lessening the vital powers of the patient. Danger is always imminent as soon as well-marked symptoms of uræmia show themselves, and this is in proportion to their steady increase in spite of medical treatment.

Inflammations of the serous membranes are fraught with great danger. Pericarditis is almost always fatal; peritonitis usually ends badly; and pleurisy, although often recovered from, is a much more serious disease than where it occurs in individuals whose kidneys are healthy. Hemorrhages into the retinæ are of evil omen, as showing that the blood-vessels are unable to bear the strain of the hypertrophied heart. Persons thus affected often perish from an attack of apoplexy. Hemorrhage from any of the mucous membranes must be regarded with serious apprehension, especially where it affects more than one organ. Dropsy is always dangerous when it occurs to any considerable extent, or when it affects any of the serous sacs. In contracted kidney œdema of the face and extremities frequently disappears for a time, and is apt to recur at intervals.

Simple hypertrophy of the heart does not add to the risk of the patient, and may be looked upon as a conservative affection, but when the valves are thickened or functionally imperfect the disorder of the circulation tends to produce a more speedy termination of the case. Vomiting occurs in all forms of chronic kidney disease, and its ill effects vary according as it is a symptom of gastritis, or arises merely from an alkaline state of the gastric secretion. Severe and obstinate diarrhœa is rare, excepting as a consequence of lardaceous disease, but when it occurs it is of evil omen, on account of the probability that the gastro-intestinal tract is also implicated. Dryness of the skin is, in like manner, an unfavorable sign, as it shows that an important eliminating organ is incapable of assisting the damaged kidneys.

In chronic tubular disease the prognosis is favorable in proportion as the attack can be traced to a definite exposure to cold or to an eruptive fever. It is also favorable when the amount of dropsy is slight, and the quantity of albumen in the urine small. Where only a little albumen remains after the dropsy has disappeared the patient may recover, even after several months' illness; but the prospect becomes more gloomy every week that dropsy and highly albuminous urine persist in spite of treatment. Most of these cases end fatally within six months, and it is very uncommon to find life protracted above two years, even when the symptoms are less pronounced. In contracting kidney the patient may live, with an imperfect state of health, for years, but any indiscretion in diet, or exposure to wet or cold, may give rise to acute and fatal tubular nephritis. The duration of lardaceous kidney is longer than that of tubular disease, and less than that of contracting kidney. A few instances have been recorded where life was prolonged for eight or ten years, but as a general rule, death takes place in two or three years at the latest.

Treatment of chronic Bright's disease (p. 32).—**A.** In lardaceous kidney surgical interference at an early period may remove the source whence the change in the blood arises and thus prevent the extension of the disease. When the renal disorder has resulted from malaria a course of quinine is necessary; iodide of potash or mercury should be employed in syphilitic cases.

F. Diet is of great importance in every form of the complaint. In cases of gouty kidney the amount of animal food must be restricted, and vegetables and fruits should be substituted. Niemeyer recommended a milk diet, and stated that he had seen excellent results from it. Any one observing the cases of chronic kidney disease in a London hospital would draw the conclusion that an excessive use of alcohol was one of the chief causes of the disease. Although this may be doubted, it is always wise, whenever there are grounds for suspecting that a patient is in the habit of indulging too freely in fermented liquors, to forbid them entirely, or to restrict him to a moderate amount. Where alcohol is necessary, either on account of a weak condition of the heart or difficulty of digestion, the form in which it should be allowed must be determined by the nature of the case. In lardaceous disease, if the quantity of urine is sufficient, malt liquors may be given; in contracting kidney the patient should be restricted to a small quantity of spirits well diluted. Where anæmia is the prominent symptom port wine, sherry, or Burgundy will be found most useful; in other cases a light claret or hock may be prescribed.

The bowels must be carefully regulated, but, unless dropsy or uræmia is present, you had better not depress your patient's strength by severe purgatives. The condition of the skin must be watched. The patient should be clothed in flannel, and use the

Turkish or vapour bath occasionally, to secure the free action of the sudoriferous glands. In mild cases the weekly use of a warm bath will be found sufficient.

Wherever the patient is able to bear it, and there are no threatening symptoms, a change of climate may be recommended. In tropical countries renal diseases are comparatively unfrequent, and I have seen a sea voyage to a warm climate of the utmost value.

Any exhausting discharge, such as bleeding from piles or leucorrhœa, should be arrested by appropriate treatment.

H. If the renal disease be associated with dilatation of the heart or any other cause likely to produce venous congestion, you will relieve the kidneys by directing the treatment to obviate it. It used to be the practice to keep up counter-irritation over the loins by means of setons, moxas, or blisters. The setons and moxas have long been laid aside as injurious, and it is found that the amount of albumen in the urine is increased by the use of blisters. Some authors advise that croton oil should be rubbed on the back, others the employment of stimulating liniments.

CHRONIC PYELITIS AND PYONEPHROSIS.

Prognosis.—When only one kidney is affected the patient may live for many years, and he is often in better health when the discharge of pus is copious. In rare cases perfect recovery has ensued by the gradual inspissation of the pus and the absorption of the diseased structures.

Treatment (p. 32).—**F**. You must carefully regulate the diet; in most cases the food should be nutritious as well as easy of digestion. On account of the long-continued suppuration tonics, such as quinine (F. 32) and perchloride of iron (F. 35), are almost always required.

G. In pyonephrosis, where there is a well-marked tumour, it has been much debated whether we should cut down upon and open the abscess. The general opinion seems to be that it is wise to restrict operative proceedings to those cases in which the pus threatens to come to the surface, and to leave to nature all others, however large may be their size.

H. As in all other inflammations of mucous surfaces, you must watch the character of the secretion. When the urine contains much mucus you can generally do good by prescribing buchu, uva ursi, or pareira brava. Where the discharge is copious and purulent astringents are valuable, such as gallic acid (F. 1), perchloride of iron (F. 36), or acetate of lead (F. 14). In the more chronic cases you may employ copaiba, cubebs, or turpentine, with advantage.

HYDRONEPHROSIS.

Prognosis.—In case the enlargement is confined to one side, the patient may recover, or he may experience no ill effects beyond the discomfort arising from the bulk of the tumour. If, however, the action of the opposite kidney is interfered with, serious consequences must necessarily result, because the organ that has hitherto performed all the excretion is suddenly arrested in its action.

Treatment.—When the disease is unilateral, and has been preceded by the symptoms of calculus, shampooing over the kidney has been recommended. In other cases tapping has been performed, but generally with an unsuccessful result. Where it is thought advisable to operate a fine trocar should be entered from behind, so as to avoid wounding the peritoneum.

CANCER OF THE KIDNEY.

Prognosis.—As in all other malignant affections we can only look for a fatal termination. The duration of the disease, however, varies greatly. In children life seldom lasts more than six or seven months after the first symptoms have shown themselves, but in adults the complaint may go on for two or three years. It might be expected, from the rapidity with which cancer of the liver or stomach destroys the patient, that malignant disease of the kidneys would be equally rapid; but as one kidney is, as a rule, alone diseased, the other, by increased functional activity, tends to compensate for the loss of that which is affected.

Treatment.—F. You must attempt to maintain the strength of your patient by a nutritious diet and a moderate amount of alcohol. When the appetite begins to fail you may prescribe acids, along with quinine, or some bitter infusion; or if there is anæmia give iron (F. 36), combined with an acid on account of the tendency to hemorrhage. Regulate the bowels by gentle laxatives, but carefully avoid all severe aperients, such as saline medicines, as they tend to lessen the already diminished contents of the vascular system.

The chief symptoms you have to treat are pain and hemorrhage.

Pain is not so common in cancer of the kidney as in the malignant affections of other organs, but if it is severe you may give morphia, either by the mouth or subcutaneously; in other cases chloral (F. 98), with or without morphia, is more useful. Remember that in this, as in all other cases of cancer, the pain is apt to assume a neuralgic character, and that it is often better relieved by steel, quinine, and other tonics, than by sedatives.

HÆMATURIA.

Treatment (p. 26).—B. In severe hemorrhage you may apply an ice-bag to the loins, but this is rarely required. More generally it is sufficient to prescribe gallic acid (F. 1), alum (F. 10), or perchloride of iron

(F. 35); acetate of lead is much less efficacious. You may combine ergot with the gallic acid, or may inject ergotine subcutaneously. Port wine is one of the most useful astringents.

D. The patient must be kept at rest. If the bleeding is excessive, let him remain in bed; if less severe, it will be sufficient that he should avoid all undue exertion.

RENAL CALCULI.

Prognosis.—It is almost impossible to lay down rules for prognosis in these cases. In one person a large stone may remain in the kidney for years without producing any irritation, whilst in another a much smaller concretion may set up fatal pyelitis. The younger the patient and the more healthy his constitution the greater the chance of recovery; in old or feeble persons the danger to life is always great.

Treatment for the prevention of calculi.—**A**. Although it is doubtful if we possess any medicine capable of dissolving a renal calculus, there is no doubt that we can lessen or prevent its increase. Ascertain if the urine is habitually acid or alkaline; if acid, the calculus is probably composed of lithic acid or oxalate of lime, and the chemical examination of any stone that may have been previously passed will help to settle the question. If the urine is acid you may prescribe alkalies, such as the liquor potassæ (F. 208), taking care that it is well diluted and taken between meals, or the alkaline bicarbonates (F. 205), or citrate of potash (F. 170), may be employed. The citrate is perhaps the best preparation, as it is the least apt to irritate the digestive organs. Given in a tumblerful of water, in doses of thirty to sixty grains, night and morning, it will usually neutralise any undue acidity of the urine. Where the urine is alkaline you may prescribe nitric (F. 30) or nitro-hydrochloric acid in some bitter infusion, or if the nutrition is much impaired you may order perchloride of iron, or syrup of phosphate of iron.

F. The diet must be carefully regulated. As general rules, an excess of acid requires a spare diet and the exclusion of alcoholic liquors, whilst, when the urine is alkaline, a more liberal and varied dietary and some form of stimulant are indicated.

The passage of a renal calculus is usually attended with severe suffering.

Treatment during the passage of a calculus (p. 29). —**A.** If the urine be very acid an alkaline liquid, such as a solution of citrate or bicarbonate of soda or potash, may be freely given. Probably the chief benefit derived from the alkaline liquids is the increase of the quantity of fluid excreted.

B. You seldom have occasion to excite or depress the vascular system. If there is great feebleness of the heart you may give small doses of brandy, but this should not be administered as a matter of course.

C. Your chief remedies are sedatives. Inject morphia subcutaneously, and repeat it every two or three hours if the pain persists, or you may give opium by the mouth. Sometimes the subcutaneous use of atropine succeeds when morphia fails. If the pain is not relieved by these, or is very severe, you may use chloroform or ether by inhalation, but as a general rule, the morphia is more certain to afford permanent relief. Along with morphia you may employ a warm bath or a warm hip bath for half an hour at a time, and afterwards cover the part, to which the pain is chiefly referred, with a large, hot, linseed meal poultice, or you may use fomentations of hot water.

CHAPTER XIII.

DISEASES OF THE BRAIN.

IT is frequently necessary to subdue mental excitement, both in cerebral diseases and where the brain is secondarily affected. As muscular motion is attended with an expenditure of nervous force you should insist upon perfect rest. In cases of delirium avoid, as far as possible, all forcible restraint, but where a padded room is not available, and you have not sufficient attendants to prevent the patient from injuring himself or others, you must have recourse to the strait jacket. Nurses are often in the habit of attempting to argue the patient out of his delusions. This should be forbidden, and perfect silence or acquiescence in his ideas should be enjoined. Unnecessary conversation in the sick room must be avoided, as a person in delirium readily catches up and dwells upon words uttered by those about him.

All excitement through the senses ought to be guarded against, as these are generally in a painful state of activity. The room must be darkened, and any light that may be necessary should be shaded. Remove curtains from the bed, as they obstruct free ventilation. The quietest room in the house ought to be selected, and it should be as far as possible from the noises in the streets. Movements of furniture should be forbidden, and the attendants should use slippers and walk as quietly as possible.

The application of cold to the head is very useful in subduing cerebral excitement. In slight cases it will be sufficient to cover the forehead and head with a cloth wet in ice-cold water; but where the symptoms are more severe the hair should be cut or shaved, and a bladder or india-rubber bag, filled with pieces of pounded ice, kept constantly upon the scalp. It is a good plan to suspend the bag by a piece of string, so that it may rest against the head without its weight being felt by the patient.

There are various drugs which are believed to act upon the nervous system. 1. Stimulants. 2. Excito-motors. 3. Sedatives. 4. Nervine tonics. 5. Those that lessen the sensibility of the nervous system, and so relieve pain.

The chief general stimulants to the nervous system are the same as those we have already found to excite the heart, viz. alcohol, ammonia and ether. Alcohol is by far the most useful of them, and requires the same cautions and rules for its administration as when it is employed to arouse the action of the vascular system (p. 42).

The excito-motors are stimulants to the spinal cord, but they have other properties, chiefly of a tonic character. Nux vomica is the most useful, and may be prescribed in the form of tincture or extract, but its active principle, strychnia, is generally preferred. Formerly it was employed in all kinds of paralysis, but it is now confined to cases where there is a depressed state of the nervous system. It should not be given if there are symptoms of an inflammatory nature, and it is useless in organic diseases of the brain or spinal cord. It is valuable in some forms of dyspepsia, and is a useful stimulant in chronic constipation; it is also a good tonic in dilated heart, when iron is inadmissible. Strychnia may be used subcutaneously, in doses of one eightieth to one sixtieth of a grain in cases of paralysis. Ergot and belladonna are considered by some as excito-motors, but their value as such is doubtful.

Sedatives include the salts of bromine, chloral, belladonna, lobelia, conium, Calabar bean, nitrite of amyl, &c. Of these, the bromide of potash is the most valuable. It is employed whenever there is much cerebral excitement unattended by inflammation. When it has to be continued for a length of time, as in epilepsy, it is useful to combine it with cinchona or some other tonic, as it is apt to produce mental weakness, failure of memory, depression of spirits, general feebleness, and an eruption on the skin when taken to excess. Chloral calms down nervous excitement, but it depresses the heart, and consequently is not so generally useful as the bromide of potash. It is prescribed to procure sleep where restlessness arises from anxiety or mental excitement; but it should be used with caution if the heart is feeble or dilated. Conium is occasionally employed in sleeplessness arising from over-excitement; it is chiefly prescribed as a sedative in pulmonary affections, when opium is inadmissible. Hyoscyamus is given for the same purposes as conium; it is one of the best sedatives in the case of children, and may be usefully combined with bromide of potash. Belladonna acts as a general sedative, but is chiefly valuable in relieving muscular spasm; when given in an overdose it produces delirium and dilatation of the pupils, and these symptoms, it must be remembered, may arise from the external application of the drug. A convenient way of using it is by the subcutaneous injection of the one hundredth to a sixtieth of a grain of the sulphate of atropia. Lobelia and stramonium, although sedatives, are seldom prescribed, excepting in cases of bronchial spasm.

All tonics probably improve the state of the nervous system, when it is enfeebled by disease, by their action on the digestive organs. Certain drugs, however, are looked upon as more especially nervine tonics, such as cinchona, strychnia, arsenic, zinc, silver, copper, phosphorus, and cod-liver oil.

Arsenic exerts a striking influence over some nervous affections, but in order to produce its full effects it is often necessary to increase the dose at regular intervals, until certain symptoms are produced. These are irritation of the conjunctivæ, whiteness of the tongue, nausea, vomiting, and diarrhœa. The best preparation is the liquor arsenicalis. The sulphate and valerianate are the most valuable preparations of zinc, and may be employed whenever iron seems to be indicated but does not agree. The nitrate of silver is rarely prescribed, excepting in some chronic affections of the spinal cord; it should not be continued longer than two months at a time, lest the skin become discoloured. The sulphate of copper was formerly much used as a nervine tonic, but is now seldom employed. Phosphorus may be given in chronic cases, either in the form of hypophosphite of soda, or dissolved in oil, or as a pill. Cod-liver oil is invaluable as a tonic in all chronic nervous disorders, and may be combined with any of the foregoing. It is not necessary to give large doses, one or two drachms being usually sufficient.

Any of the sedatives may be employed to procure sleep or relieve pain, but none is equal to opium for these purposes. It should be prescribed with caution for children, as they are very susceptible to it, for persons suffering from chronic diseases of the kidneys, in whom a small dose is often followed by dangerous symptoms, in congestion of the lungs, and in bronchitis where there is excessive secretion along with a feeble power of expectoration. When decided effects are required it is best to use opium in the form of tincture, or the subcutaneous injection of morphia. In the latter case do not begin with large doses, one sixth of a grain being sufficient at first.

Subcutaneous injection is one of the best methods of employing sedatives, as the drug is by this means at once introduced into the circulating system. A small syringe, to which a fine perforated needle is affixed, is employed for this purpose. The skin of the arm or leg is pinched up, and the point of the instrument introduced until the subcutaneous cellular tissue is reached, the piston is then pushed down, so as to expel the fluid, and the needle is withdrawn. Different forms of syringe have been invented. In one the piston is moved with a screw, so regulated that each turn corresponds to a measured quantity of the liquid, in another it is prevented by a stop from expelling more than the desired quantity. These contrivances are unnecessary for any person who will exercise ordinary care.

For information respecting the use of electricity, which is much employed in the treatment of nervous disorders, I must refer the student to the works of Dr. Russell Reynolds, Dr. Althaus, or the very practical book of Dr. Tibbits.

SECTION I.

MORBID STATES NOT NECESSARILY DEPENDENT ON ORGANIC DISEASE.

Diseases of the brain are of great importance, because their diagnosis is often obscure at an early period, when medical treatment is most likely to be useful. In addition to this, there is scarcely any serious acute disorder in which this organ is not liable to be secondarily affected. The physician, therefore, has to watch in all acute, and in many of the chronic, maladies he has to treat for any manifestation of excitement or depression of the nervous system.

The slighter degrees of cerebral excitement are accompanied by headache, throbbing of the temples, sleeplessness, irritability of temper, partial delirium, and increased sensibility to light and sound. In the more severe the patient is violent, incapable of control, he ceases to recognise those around him, the delirium is noisy, his wakefulness constant, the pulse rapid, the head hot, the eyes glistening, the appetite is lost, and the other functions of the digestive organs are imperfectly performed. Sooner or later nervous excitement terminates in depression; in other cases this condition is present from the first.

When there is much depression the patient lies on his back, unwilling to be disturbed, and although he may be roused by shaking or any unusual excitement, he quickly relapses into a low, incoherent muttering. The pulse is small, quick, and feeble, the head cool, the eyes sunk, and the urine is apt to collect in the bladder from the loss of its normal sensibility. If the depression increase, there is irregular twitching of the muscles or picking at the bedclothes, the patient is incapable of being roused, the pulse becomes rapid and irregular, the breathing quick and shallow, the sphincters lose their power, and life gradually becomes extinct.

Delirium.

This is always an alarming symptom. It may vary from a slight wandering of the mind to a state of maniacal fury, in which the patient is unconscious of all around him, and in which he fails to recognise his dearest friends.

It may arise from a number of different conditions:—1. It is a symptom which presents itself in most of the inflammatory affections of the brain and its membranes. 2. It is a common result of exhaustion, whether this has been produced suddenly or slowly. For instance, where a person has been for some weeks affected with a febrile disorder delirium not unfrequently occurs, and will mislead those who are in the habit of looking upon it as always an evidence of inflammatory action. 3. It takes place when the functional activity of any of the excreting organs have been greatly impaired, as in acute atrophy of the liver, Bright's disease, or congestion of the lungs. 4. An overheated state of the blood is sufficient to cause it; thus it often shows itself where the temperature has become greatly elevated, and disappears as soon as the superfluous heat is removed by treatment. 5. Irritation of any important organ may give rise to it in a person of an excitable temperament. 6. Various poisons, such as belladonna and alcohol, produce delirium.

In all the more active forms of delirium you should remove from the patient every circumstance likely to excite him, and the directions before given for subduing mental excitement should be attended to. Where hot bottles or mustard poultices are required they must be removed at the proper time, lest injury be produced by their too prolonged employment.

1. In inflammation of the brain or its membranes delirium will be best relieved by shaving the head and applying bladders or india-rubber bags filled with ice, but, of course, the case must be otherwise treated according to its requirements, without reference to the mental excitement. 2. When you have reason to believe that it is the result of exhaustion and the skin is cool and the pulse weak and compressible you must prescribe beef tea, soup, wine, or brandy. Even a few doses of stimulants are often followed by immediate improvement. In these cases morphia and chloral are invaluable by giving rest and thus restoring the brain to the proper performance of its functions. You must, however, bear in mind that sedatives are contraindicated by a comatose condition, by a contracted

state of the pupils, chronic kidney disease, or pulmonary congestion. You must avoid the use of cold to the head, as tending to depress the patient's strength. 3. Delirium from imperfect excretion must be combated by stimulation of the organ in fault to increased activity, or by removing, through other surfaces, the effete materials accumulated in the system. Morphia and chloral should be avoided, and bromide of potash employed, where a sedative is absolutely necessary. 4. When you have reason to believe that the delirium is the result of an overheated state of the blood you must lessen the temperature. The most effectual means for this purpose is the cold bath, but when this cannot be employed you may use cold sponging. Salicylate of soda, quinine, and saline medicines assist in producing the same effect, and may be employed according to the circumstances of the case. 5. Delirium from reflex irritation should be treated with sedatives, such as bromide of potash, chloral, or morphia, regard being also paid to the organ primarily affected. 6. Besides alcohol, the effects of which will be considered by themselves, belladonna is not unfrequently the cause of delirium. It may result from the application of liniments or plasters, and the dilatation of the pupils will at once give you a hint as to the cause.

DELIRIUM TREMENS.

Prognosis.—A first attack is rarely fatal, but the danger increases with each subsequent illness, because the long-continued and excessive use of alcohol invariably produces some structural change in the tissues. The disease is, of course, less liable to terminate unfavorably in the young than in middle-aged or elderly persons. In an individual otherwise perfectly healthy, very violent symptoms may subside, but if the case is complicated with hæmatemesis, pleurisy, pneumonia, or any other acute malady, it must be looked upon as very serious, even if the delirium is of a mild character. Any coexisting affection of the kidneys is especially apt to lead to a fatal termination, because they are the chief organs by which the alcohol is eliminated from the system.

The condition of the heart is the most reliable guide as to the danger of the patient. The more dicrotous, or the more irregular and intermitting the pulse, so much the more serious is the attack. You ought, therefore, to watch the state of the circulation at every visit, and as the changes are often rapid and unexpected you must see your patient frequently, in order to vary the treatment if necessary. Be cautious in your prognosis if you discover an hereditary tendency to insanity, for an excess in alcohol often leads to its development, and a craving for stimulants is sometimes one of the earliest symptoms of mental disease.

Treatment.—The same general principles that regulate the treatment of all acute disorders must be applied to the management of delirium tremens. But the patient may present himself to your notice under very different conditions:—1. There is a premonitory stage, when the intellect is still unimpaired, but he is restless and unable to sleep, has a foul tongue, loss of appetite, high-coloured urine, and constipation. 2. The stage of excitement, in which he suffers from illusions of the senses, is delirious, with a quick pulse and sweating skin. 3. A condition of great depression, when he lies in a state of unconsciousness, with low, muttering delirium, broken, perhaps, by snatches of sleep.

A. There is considerable difference of opinion as regards the advisability of excluding alcohol from the treatment of delirium tremens. As a general rule, you will find it best to withdraw it entirely during the first two stages, not only in order to hasten its elimination, but also for the patient's future benefit.

Persons who drink to excess are only too glad for any excuse for indulgence in their besetting sin, and are fond of quoting the orders of the physician as a reason for persisting in their evil habit. In the third stage a carefully measured quantity of some form of alcoholic beverage is often necessary to support the action of a heart so long accustomed to an artificial stimulus. Here the pulse is your best guide, and the more this tends to become irregular or intermitting the greater is the necessity for the use of stimulants. Where there is unconsciousness, or the patient has difficulty in swallowing, it is best to administer enemata of beef tea mixed with brandy.

In the first stage you may often check the complaint by acting upon the digestive organs with a dose of calomel (F. 145), followed in a few hours by a saline aperient (F. 135). As soon as the bowels have been fully relieved you should prescribe frequent and small doses of morphia along with ether (F. 71). In all cases where there is a foul tongue, together with nausea or vomiting, a dose of calomel will probably be useful.

In the second and third stages you should be most careful to support the strength of the patient by means of beef tea, soups, milk, or coffee, given frequently and in small quantities, as substitutes for the stimulus to which he has been accustomed.

B. However furious may be the delirium you never employ venesection, or any other depleting measures, nor do you attempt to depress the vital powers by cold applications to the head. When the delirium is excessive, the skin hot and dry, and the pulse firm, you will find a combination of tartar emetic with opium the most useful remedy. Large doses of digitalis have been recommended, and as much as half an ounce of the tincture has been given, but this drug does not seem to have much effect upon the delirium, although it may be useful in moderate doses when the action of the heart is becoming irregular and intermitting.

C. Formerly very large and often repeated doses of opium were looked upon as a specific for delirium tremens, but great mischief resulted from the practice. As has been before said, small doses of morphia are valuable after a free evacuation of the bowels in the premonitory stage. In the second stage you may inject a quarter of a grain every three hours for three or four times, or give it by the mouth; but if this does not induce sleep you had better omit it for twenty-four hours. Where the action of the heart is feeble it must be used with great caution. Chloral has been largely employed, but it is inferior to opium in its effects, and is more apt to depress the heart. A moderate dose, given along with morphia, often acts better than when either is administered alone. When convulsions are present the bromide of potash, in half drachm or drachm doses, should be administered and frequently repeated, in addition to the morphia or chloral.

When your patient recovers, you should use the opportunity of urging him to abstain entirely from all alcoholic liquors. It is of no use recommending moderation; nothing but entire abstinence will enable him to overcome his fatal propensity.

CONVULSIONS.

These occur at all ages, and accompany very different morbid conditions. They may arise from a very slight irritation, or may be the result of incurable cerebral disease; they vary from the drawing-in of a thumb or toe to general involuntary movements of all the muscles of the body. Children are especially liable to convulsions, which seem at times to replace in them the delirium of adult life.

Convulsions are most often associated with—1. Injuries to the skull and organic diseases of the brain. 2. Exhaustion, as in cases of severe or prolonged diarrhœa in children. 3. Imperfect action of the excreting organs, especially of the kidneys. 4. They often usher in an attack of the eruptive or other fevers, such as scarlatina or measles. Their exciting causes are exceedingly various, but the most common are the irritation of teething, an overloaded state of the stomach, or a disordered condition of the bowels.

Treatment (p. 29).—**A.** In children you must always search for some exciting cause. If the teeth are projecting the gums must be freely divided; if you have reason to believe that the attack is due to an overloaded stomach you should administer an emetic; a dose of calomel or an aperient enema is the best means of carrying off any irritating matters from the intestines. In adults you can rarely discover an exciting cause. Where a diseased state of the brain seems to give rise to the convulsions, the treatment must, of course, depend upon the nature of the original malady.

B. Venesection, formerly so invariably employed, is now restricted to cases of uræmic convulsions in young and healthy persons, especially where they occur during pregnancy. Some also recommend it when healthy children are convulsed from an attack of cerebral congestion, but the application of leeches to the temples is ordinarily sufficient. In every case the bowels should be freely opened by a dose of calomel, or by an aperient enema. The application of an ice bladder or of cold water compresses is useful whenever there is increased heat of the scalp, accompanied by a pulse of tolerable firmness, or when you have reason to believe that congestion of the brain is present.

You are called upon to employ stimulants when the patient is much exhausted from diarrhœa or other depressing disorders, and they may be administered in the form of an enema if he is unable to swallow. When food can be taken, milk, beef tea, or some other form of nourishment should be frequently administered. In such cases you must not apply cold to the head, lest you still further depress the vital powers. When the convulsions usher in an attack of an eruptive fever you must be guided in your treatment by the pulse and temperature. If the latter is much elevated employ cold sponging, or the cold bath; whilst if it is below the normal point the use of the warm bath or hot poultices to the chest and abdomen, together with stimulants and liquid nourishment, is indicated.

C. There are few cases in which some form of sedative is not required, for convulsions indicate an irritated and unstable condition of the nervous centres. The most useful of these remedies are bromide of potash and chloral, which may be given either alone or in combination, and may be repeated frequently if necessary. If the patient be unable to swallow, a somewhat larger quantity may be administered in an enema. Where these fail small doses of morphia may be used, either by the mouth or subcutaneously. The inhalation of ether or chloroform is invaluable where there is no organic disease of the nervous system, but it should be cautiously employed in uræmic cases. I need not remind you again that in uræmia even small doses of morphia often act very energetically, and should be prescribed with caution. In children the early use of a warm bath will frequently obviate the necessity of the soothing remedies just mentioned, the head being kept cool with cold water whilst the body is heated by the bath.

NEURALGIA.

Pain affecting a nerve may arise from inflammation of its sheath or substance, or, as is more usual, it may be the result of irritation. In the latter case the neuralgia may be caused by any severe irritation occurring in a person otherwise healthy, or by a slight exciting cause in an individual whose nervous system is in an abnormally sensitive condition. Inflammation of a tooth, for example, may set up neuralgia of the face, which will subside as soon as the tooth is removed; whilst, on the other hand, excruciating pain in the branches of the fifth nerve may be produced by the mere exertion of speaking or eating in a person predisposed to the complaint.

The suffering is not necessarily felt in the nervous filaments immediately irritated, it may be reflected to others at a distance. Thus, pain of the back may result from an affection of the rectum in the male, or of the uterus or ovaries in the female. Intercostal neuralgia is frequently produced by disease of the digestive organs or uterus; whilst sciatica may be due to some derangement of the kidneys or to piles. In every case, therefore, you must not restrict your search for the source of irritation to the nerves that seem to be the seat of the pain, but should investigate the condition of others that are connected with them.

The abnormal excitability of the nervous system that predisposes to neuralgia may be hereditary, but where such is not the case it may be produced—

1. By anæmia, resulting from loss of blood, as, for example, from excessive menstruation or bleeding piles; or arising from a long-continued drain upon the system, as in leucorrhœa and prolonged suckling; or occurring after fevers or other diseases which deteriorate the quality as well as lessen the quantity of the blood. In all probability the neuralgic attacks which are so common in chronic kidney disease originate from this cause. Where neuralgia seems to have arisen from anæmia the treatment must be directed to check any discharge that may be present, and to improve the quality and increase the quantity of the circulating fluid by means of good diet, iron (F. 38), quinine (F. 52)

cod-liver oil, and other tonics of a similar character. 2. Neuralgia may be often traced to gout or a gouty constitution, and in some cases no relief is obtained until an affection of a joint diverts, as it were, the irritation from the nerve. When you have reason to suspect this to be the cause the diet must be carefully regulated, alcoholic stimulants should be restricted or forbidden, and alkalies and colchicum (F. 116) administered. In some cases it can be traced to syphilis, and then iodine or mercury is required. 3. Malaria is a common cause of neuralgia, especially where the supra-orbital branch of the fifth nerve is affected. It may present itself at a considerable period after all other indications of ague have subsided. Cases of this description require quinine (F. 32), arsenic (F. 105), good diet, and a moderate amount of alcohol.

An abnormal amount of excitability appears in some cases to be owing to the abuse of alcohol or tobacco. It is not necessary that large quantities should have been consumed, for in some persons a comparatively small amount seems to be deleterious. Where you have reason to suspect such to be the case, indulgence in them must be strictly forbidden.

PAINS OF THE HEAD.

This is one of the most frequent complaints requiring the attention of the practitioner. A number of different affections may give rise to it, which require to be carefully distinguished.

1. Neuralgic headache is a common accompaniment of tumours and other diseases of the brain. The pain is generally very severe, and is chiefly experienced in the course of the nerves. The treatment of course depends on the nature of the disease causing the pain.

It also often arises from anæmia, mental exhaustion, and other depressing conditions, as well as from affections of the teeth and ear. In these cases it is generally relieved by food and stimulants, and is increased by fatigue or excitement. Pain at the top of the head, or a little to one side of the median line, often results from hysteria and nervous exhaustion. Neuralgic headaches are best treated by stimulants (F. 49), and when very severe by a moderate dose of morphia or chloral (F. 99). Between the attacks the strength must be improved by tonics, such as iron (F. 37), quinine (F. 32), strychnia (F. 33), by a liberal diet, and a moderate amount of alcohol. Malt liquors are especially useful.

2. Rheumatism occurs frequently in the scalp. There is a general tenderness over the head, the pain being increased by pressure and by movement of the brows or other actions of the muscles. It often arises from exposure to cold, and is best treated with iodide of potash (F. 113), diaphoretics (F. 175), warm baths, and alkalies (F. 206).

3. Syphilitic periostitis is a common cause of severe headache. The pains are usually increased at night, and the bones of the skull are very tender on pressure. You should treat such cases with iodide of potash (F. 113) in the day, and with calomel and opium at bedtime.

4. Dyspeptic headaches occur shortly after food or during the digestive process. The pain is generally of a dull character and is often accompanied by giddiness, whilst other signs of indigestion, such as acidity, flatulence, and constipation, are present. Such cases must be managed according to the principles regulating the treatment of the form of dyspepsia from which the pain of the head arises.

5. What is popularly termed "bilious headache" is a very common affection. The pain is accompanied by vomiting and some intolerance of light and sound. The attacks come on occasionally, and often without any apparent cause, the digestion is habitually imperfect, and the bowels much constipated. When

the headache and vomiting are present you can do little to relieve, excepting by the application of cold water or ice to the head. You may prescribe an aperient as soon as the nausea and vomiting subside. In the intervals of the attacks you should carefully regulate the diet; pills of podophyllin (F. 148) are most useful in maintaining a free action of the bowels, and a long course of liquor potassæ and bromide of potash seldom fails to afford relief (F. 112). In long-standing and obstinate cases you may give arsenic (F. 105), at the same time that you keep the bowels open with podophyllin. All alcoholic stimulants should be forbidden, and the patient encouraged to take regular exercise in the open air.

NEURALGIA OF THE FACE.

Pains confined to the face alone are, in most instances, the result of some irritation of the gums, nose, or ear, and cease when the cause is removed. But cases accompanied with intense suffering occur, in which it is impossible to ascertain the exciting cause.

Treatment (p. 39).—A. Search most carefully for some local cause of irritation, especially in the gums, nose, eyes, or ears, and if you fail to discover a sufficient reason for the pain ascertain if your patient has suffered from syphilis, gout, rheumatism, or malaria, and if so, direct your treatment accordingly.

F. The diet should be nutritious, but when the pain is very severe it is often necessary to restrict the patient to liquids, for the slightest attempt at mastication may bring on a severe paroxysm. If you can discover that any discharge likely to produce anæmia is present, such as leucorrhœa or menorrhagia, means must be taken to restrain it.

H. Where there is evidence of nervous exhaustion you may prescribe, with benefit, phosphorus, either in the shape of pills or dissolved in oil, along with cod-liver oil. As a general rule, however, it is less useful than the mineral tonics.

In every case, on account of the excessive suffering, you must have recourse to sedatives, and it will be necessary to vary from time to time the drugs you prescribe and the method of administration. Morphia is, without doubt, the most valuable, especially when employed subcutaneously. In some cases it acts beneficially when placed in the ear, or ointments of opium may be rubbed on the affected parts. Liniments of belladonna (F. 89), aconite (F. 86), or chloroform (F. 87), may be employed where morphia fails, or the veratria ointment may be had recourse to. Chloral and bromide of potash internally are less useful than morphia.

Various nervine tonics are prescribed for the relief of facial neuralgia, but arsenic is the most useful (F. 104). It should be given at first in a small dose, which should be increased every third or fourth day, until the physiological effects are produced in a slight degree. Where arsenic fails, zinc (F. 70), iron (F. 69), or strychnia (F. 94), may be had recourse to.

In many cases of a chronic character a continuous current of galvanism is of great service. It should be used at first weak, its strength and duration being gradually increased.

PARALYSIS.

This condition may arise from any cause that interferes with the conducting power of the structures by which the will acts on the voluntary muscles, and consequently it may result from an abnormal state of the motor fibres in the brain, spinal cord, or nerves, as well as from anatomical changes in the muscles themselves. The prognosis, and also the treatment, vary accordingly.

The most common causes of extensive paralysis are hemorrhage, embolism, or thrombosis of the vessels of the brain or spinal cord; but it may also result from softening, tumours, or sclerosis, affecting the nervous centres.

The prognosis in such cases is chiefly dependent upon the nature and extent of the primary disease. In old persons recovery from paralysis is usually slow and imperfect. In any case the more complete the palsy, and the longer the time before improvement begins, the smaller is the chance of cure. When early contraction of the muscles shows itself the prospect of a complete restoration is unfavorable. Little can be expected from treatment where contraction arises from muscular shortening. Paralysis following chorea or hysteria always disappears under proper treatment. In cases of epilepsy the prospect of cure depends upon whether there be any coexisting disease of the brain. Where this is not the case the loss of power is usually of short continuance.

The prognosis is favorable when the paralysis has resulted from a rheumatic affection of the nerve, it is hopeless where a nerve has been pressed upon, or disorganised by a tumour or diseased bone. If the loss of power seems to arise from degeneration of the muscular fibres themselves, the prognosis, as regards perfect recovery, is bad, as in most of such cases the atrophy is connected with an alteration in the nervous centres or a destruction of the nerve fibres. By appropriate treatment, however, considerable benefit may be produced in some of the cases of this description. In recent and slight cases of paralysis from lead the prospect is good.

Treatment.—**A.** In hemiplegia the paralysis is usually the result of some previous morbid condition of the brain, and we have, therefore, no causal indications to direct us; but where syphilitic disease of the nervous centres is present appropriate treatment is required. When it is connected with hysteria or chorea you must attempt to restore the general health by tonic treatment, the diet should be nutritious, and, if possible, change of air and scene should be obtained.

F. Pay attention to the digestive and assimilating organs. In hemiplegia from cerebral disease the excreting structures will chiefly require attention, whilst in hysterical or choreic cases the main endeavour must be to remove any morbid state of the stomach or bowels that may be present.

H. Innumerable methods have been proposed to stimulate the affected muscles. Formerly it was the custom to administer strychnia in all cases of paralysis. This drug is now rarely given, excepting where there is reason to believe that the loss of power arises only from a functional defect.

Injections of strychnia (one thirtieth part of a grain) into the muscular fibres have been recommended, and in some cases benefit seems to follow their use. Stimulating liniments are generally of advantage in keeping up the circulation in the palsied parts. They may be composed of turpentine, acetic acid, ammonia, &c. Baths of salt or other stimulants are also in common use. Passive motion is often very beneficial.

Electricity is the most valuable means at our disposal; it may be used either as a continuous or an interrupted current, and the galvanism may be applied to the muscles themselves, or may be passed along the course of the nerves leading to the affected parts.

SECTION II.

Acute Diseases of the Brain.

Congestion of the Brain.

Although this term is often applied very loosely to explain certain cerebral symptoms, the cause of which is not evident, there is no doubt that congestion of the brain is a frequent and also an important condition. It may occur along with, or independent of other diseases, and may consist in a general or a local repletion of the blood-vessels. It may arise from an increased determination of the arterial, or from an imperfect escape of the venous blood from the cranium. The most dangerous cases are those in which apoplexy or delirium is present.

Treatment (p. 23).—**A**. The causes of cerebral congestion vary greatly, and are often difficult to discover. In middle life excessive mental exertion is one of the most common, and must, of course, be forbidden. When a plethoric condition of the system seems to have given rise to it a spare and non-stimulating diet is to be enforced. If the patient has been in the habit of indulging to excess in alcoholic stimulants these must be withdrawn. In the young and also in old people, exposure to the heat of the sun often acts as an exciting cause of cerebral congestion, and consequently care should be taken to avoid it. Where the congestion is the result of heart disease, hooping-cough, or other obstruction to the venous circulation, the treatment of the primary disorder is to be mainly pursued.

B. You should limit the employment of venesection to cases in which there is coma or delirium, the symptoms being urgent, the pulse firm, and the patient robust. Here the detraction of blood often affords marked and immediate relief. But you may lessen the congestion in less urgent cases by the use of cupping to the neck, or of leeches to the temples or to the nose. In children leeches are usually sufficient, and in cases of local congestion in adults, as where tumours of the brain are present, they usually afford relief. In old and feeble persons dry cupping is often very serviceable. The use of a bladder filled with ice or of ice-cold water to the scalp is one of the best means of reducing cerebral congestion; but the application must be continued for many hours to be of any real service. Mustard blisters to the neck and feet are also useful. In all cases you should act freely upon the bowels, so as to remove from the circulation a considerable quantity of fluid. For this purpose you may in severe cases employ calomel (F. 145) or croton oil (F. 151); when less active measures are indicated sulphate of magnesia (F. 135), tartrate of soda, or some aperient mineral water, may be prescribed. As soon as the vascular system is sufficiently depleted frequent doses of bromide of potassium may be given, to equalise the cerebral circulation and to soothe the excitement of the nervous system.

D. During an attack, whether the congestion be local or general, the head should be kept raised, so as to favour the return of the venous blood. You afford rest to the brain by restricting bodily exertion to what is absolutely necessary, forbidding any mental excitement, and preventing any undue amount of light or sound.

E. The diet should consist of beef tea, milk, and farinaceous food, but in old and feeble people a more stimulating diet and a moderate amount of alcoholic stimulants are usually necessary.

SIMPLE MENINGITIS.

Prognosis.—Inflammation of the membranes of the brain is always attended with extreme danger, partly on account of the importance of the organ attacked and partly because it is usually the result of some other severe disorder. Idiopathic meningitis is extremely rare, inflammation of the cerebral membranes usually resulting from an injury to the head, disease of the ear or nose, syphilis, or some structural change in the brain. The prognosis is most hopeful when we are unable to discover one of these conditions. The duration of meningitis is seldom more than ten days. Although it often follows abscesses of the internal ear, you must not necessarily conclude that this complication is present whenever serious symptoms make their appearance in aural diseases, for various cases have been diagnosed as meningitis which have been suddenly relieved by a copious discharge of pus from the ear.

Treatment (p. 23).—**A.** Any injury of the head followed by symptoms of meningitis requires careful surgical treatment. When they are connected with a discharge from the ear you should apply fomentations and poultices, so as to encourage the escape of the pus, and thereby prevent its accumulation in the interior of the organ.

B. When you are unable to discover suppuration in any of the bones of the skull you will find it advantageous to use venesection to a moderate amount. This should, however, be only practised if the patient is young and vigorous, the pulse firm, and the onset of the symptoms recent. Where general bloodletting seems to be contraindicated leeches may be applied to the temples, or cupping used to the neck; in children leeches only are required; if the patient be old and feeble dry cupping to the neck may be employed. In all cases the head should be shaved and covered with an ice bag, or with cloths wrung out of ice-cold water. The bowels must be freely purged by means of salines (F. 135), with or without the addition of tartar emetic, or if there be vomiting a dose of calomel, calomel and jalap, or croton oil, may be placed upon the tongue. Calomel used to be always given so as to produce salivation, but it is now rarely used excepting in traumatic cases.

When the meningitis arises from pyæmia, and is from the first attended by great depression of the system, stimulants, such as ammonia, alcohol, and ether, are required. In like manner, when the patient is exhausted by the inflammation, these remedies are necessary, and the application of blisters to the neck is then advisable.

C. As the pain of the head, although often excruciating, depends on the inflammation, sedatives are seldom given, the ice bag and depletion affording relief more rapidly. In cases of suppuration in the ear morphia must be prescribed, in order to relieve the severe suffering. If convulsions occur frequent doses of bromide of potash or some other sedative are indicated.

D. Let the head be raised, so as to encourage the return of the venous blood from the brain. The room must be kept quiet and dark, and during the delirium the patient should be carefully watched.

E. In the acute stage the diet should consist of milk and farinaceous food, but if signs of exhaustion present themselves, soup, beef tea, and stimulants are required. Delirium may continue during this period from exhaustion, but the head will be cool, the face pale, and the pulse weak and compressible.

TUBERCULAR MENINGITIS.

Prognosis.—Although the duration, which varies from seven to twenty-one days, is longer than that of simple meningitis, this disease is much more certainly fatal, for scarcely a well authenticated case of recovery is on record. Authors often point out that shortly before death the patient may recover consciousness, and they warn their readers not to build hopes of a cure upon such a condition. But you will find such signs of apparent improvement very rare, the patient usually, gradually but steadily, getting worse from the first. Do not forget, however, that children who have been much exhausted by diarrhœa or injudicious feeding are liable to anæmia of the brain (hydrocephaloid disease), and that the symptoms of this condition very closely simulate those of tubercular meningitis.

Treatment (p. 23).—**A.** As soon as tubercular meningitis has fairly shown itself you have no causal indications for treatment. But as in the majority of cases the patient has been for some time previously out of health, the fatality of the brain affection should induce you most carefully to treat any premonitory symptoms. The chief means at your disposal to obviate tubercular mischief are a careful regulation of the digestive organs, fresh air and exercise, cod-liver oil, and preparations of iron and iodine.

B. In tubercular meningitis you must follow the same line of treatment as in simple inflammation of the cerebral membranes. Venesection is never required, but where the pain is severe the use of leeches to the temples and of the ice bag tends to relieve pain. In children vomiting is rarely absent, and is best treated by a dose of calomel, followed by a purgative enema or saline aperients. Calomel was formerly used to produce salivation, but this has fallen into disrepute. Some practitioners recommend iodide of potash, but it seems to have no influence over the progress of the malady. Blisters are often prescribed, but they only add to the discomfort of the patient, without affording any relief.

C. When there is a tendency to convulsions bromide of potash is beneficial. If the pain be excessive, as is often the case when adults are affected, you may afford relief by the use of chloral (F. 98) or morphia (F. 73); as a general rule you will not gain much advantage by the use of sedatives.

E. The diet should be light and nutritious, and should consist of liquids, such as milk, beef tea, chicken broth, &c. All alcoholic and other stimulants should, as far as possible, be avoided.

APOPLEXY.

Prognosis. — An apoplectic fit may result from hemorrhage, or from an obstruction to a cerebral artery, produced by an embolus or thrombus. As it is difficult, and in many cases impossible, to determine from which of these causes the fit has arisen, it is better to consider it under the general term of apoplexy. A person who has been suffering from diseased heart or kidneys, is placed in imminent danger by any considerable interference with the cerebral circulation; consequently the previous state of the patient's general health is a most important point in the prognosis.

Cases that commence with severe pain in the head and vomiting are always of a very dangerous character, as are also those in which hemiplegia is quickly followed by deep coma. The same may be said of those that are attended by general convulsions. The danger is ordinarily in proportion to the depth of the coma and the amount of paralysis. Where the loss of power is general the prognosis is always bad, as probably hemorrhage has taken place into the ventricles, the arachnoid space, or into the pons Varolii. Likewise, when the automatic muscles are involved there is great danger, and therefore a deviation of the head or eyes, or a deficient action of the intercostal muscles, is of evil omen. As regards the probability of complete recovery from the subsequent paralysis, you must be chiefly guided by the extent of the palsy and the amount of improvement that takes place in the first few weeks after the fit. Where there is rapid wasting of the muscles, or much pain and stiffness on motion, you cannot hope for much permanent improvement.

Treatment.—**A.** If you see the patient during the stage of unconsciousness you may find him in a state suggesting either the idea of congestion or of anæmia of the brain. The face may be flushed, the head hot, the pulse firm, or the very opposite conditions may be present. In the former the head must be raised and kept cool, in the latter it should be laid low, and all depressing influences avoided.

B. There is no disease in which the opinions and practice of the medical profession have undergone a more complete change than in apoplexy. Formerly a practitioner was looked upon as guilty of the grossest neglect if he did not open a vein as soon as he was called to a patient in a state of coma; there are now many who teach that venesection is always useless or injurious. We might, however, expect that free depletion would so greatly lessen the tension of the vascular system as to prevent a recurrence of the hemorrhage, or that by it we might diminish cerebral anæmia where this was dependent on an excess of venous blood in the brain. The following advice, given by Niemeyer, seems to be judicious:

"If the impulse of the heart be strong and its sounds loud, if the pulse be regular, and no signs of commencing œdema of the lungs exist, we should bleed without delay. Local bleeding by leeches behind the ears, or to the temples, or by cups to the back of the neck, cannot replace general bleeding, but may be used as adjuncts. If, on the contrary, the heart's impulse be weak, the pulse irregular, and rattling in the trachea has already begun, we may be almost certain that bleeding would only do harm, since the action of the heart, which is already weakened, would be still more impaired, and the amount of arterial blood going to the brain would be thus still more decreased. When the latter state occurs, the symptomatic indications require just the contrary treatment, in spite of the original disease being the same and being due to the same causes. We must strive with all our skill, by the use of stimulants, to prevent paralysis of the heart. If we cannot give wine, ether, musk, &c., internally, we should apply large sinapisms to the chest and calves of the legs, rub the skin vigorously, and sprinkle the breast with cold water. In all cases the bowels should be freely moved, either by a dose of calomel or croton oil, or by an aperient enema."

If you see the patient after he has recovered from his unconsciousness, you should content yourself with keeping him at rest, covering the head with an ice-bag or cold compress, and maintaining a free action of the bowels.

In the fever that is apt to follow an attack of apoplexy, and which depends on inflammation of the cerebral substance in the vicinity of the injured part, you may apply leeches to the temples and ice or cold water cloths to the head, if the pulse is firm and the skin hot. When there is feebleness of the heart's action dry cupping or a blister to the neck is more efficacious. In either case the bowels must be kept freely open and the diet should consist of liquid food. It is the custom with some practitioners to prescribe mercury or iodine after an attack of hemiplegia, under the idea that absorption of the clot will be thereby promoted; but no beneficial results seem to follow such treatment.

In the paralysis following an attack of apoplexy you may produce good effects by frictions and galvanism, as these measures serve to maintain the nutrition of the muscles. Strychnia, given internally, seems to be of little use, but Dr. Hammond has recommended its subcutaneous injection into the muscles as often beneficial.

As an attack of apoplexy tends to render a recurrence probable, by the changes produced in the circulation of the brain, you should insist upon your patient avoiding all excitement of body or mind. He should be strictly temperate in eating, and not indulge in alcoholic stimulants, unless they are required for some special purpose.

ABSCESS OF THE BRAIN.

Prognosis.—This may occur as an acute or chronic affection. It is generally the result of an accident to the skull, disease of the internal ear or the bones of the nose, or of pyæmia. In the acute form it runs a rapidly fatal course, and the encephalitis producing the abscess may so closely simulate inflammation of the cerebral membranes that it may be impossible to distinguish between them. In chronic cases the pus may become walled in by connective tissue, and the patient may live for many months, or even for years.

Treatment.—This must of necessity be unsatisfactory, because we are usually unable to diagnose the existence of the encephalitis until an abscess has been formed, and we have then no means by which we can give exit to the pus. In traumatic cases you may bleed from the arm, use leeches to the temples or behind the ears, and apply an ice bag to the head, at the same time that the bowels are kept in free action by saline or other aperients. Calomel, so as to affect the mouth, was formerly always recommended, and is still employed by many practitioners. In pyæmic cases we must content ourselves with giving quinine (F. 32), acids (F. 31), alcoholic and other stimulants, together with a nutritious diet. When the abscess has arisen from disease of the ear, which is the most general cause, recourse must be had to hot poultices and fomentations, so as to encourage the escape of the discharge, at the same time that we support the general strength, and relieve pain by opium. The treatment of chronic abscess is the same as that of chronic softening of the brain.

SECTION III.

CHRONIC DISEASES OF THE BRAIN.

CEREBRAL ANÆMIA.

This is often assumed to be present when there are symptoms of cerebral disturbance, for which no other cause can be assigned, accompanied by a feeble state of the vascular system. It presents itself in general anæmia, after hemorrhages, and in many acute and chronic maladies of an exhausting nature. Some authors describe as cerebral anæmia what others term "*nervous exhaustion.*" In this condition the patient has a deficiency of memory, of power of attention, and of mental concentration. He has lost his accustomed energy and resolution, and is more feeble than formerly, both in body and mind. He complains of pains and numbness in different parts of the body, of palpitation, and a dread of sudden death. He suffers from headache, giddiness, imperfection of sight, and almost always from flatulence, loss of appetite, and other symptoms of feeble digestion. Such cases are always very tedious, and the patient is generally so vacillating that it is difficult to persuade him to persist in any settled line of treatment.

Treatment.—**A.** The commonest cause of nervous exhaustion is an undue excitement of the brain, arising from grief, long-continued anxiety, or other mental strain. The most difficult point is to direct the thoughts of the patient from himself and his own sensations. This is best effected by change of air and occupation. In other cases the cause of the nervous exhaustion is irritation of some sensitive organ. Thus, amongst females you often meet with uterine derangements, in men with an over-indulgence in venereal excitement, or with frequent seminal emissions, as giving rise to the complaint. The cause must in any case be attended to, and, as far as possible, removed.

F. You rarely meet with a case in which the digestive organs are not deranged. The diet should be therefore carefully regulated, and it is generally necessary to restrict the amount of alcoholic beverages, for patients are apt to indulge in them to excess, in order to relieve the mental depression from which they suffer. Where there is danger that a habit of drinking may be thus induced, you should substitute ammonia, tincture of lavender (F. 49), or ether, for wine and brandy. The bowels are usually constipated, but you must be careful not to prescribe irritating aperients, as a single full dose of cathartic medicine may undo all the good that may have been effected by long and careful treatment. If the appetite be bad, or other signs of feeble digestion present themselves, quinine (F. 33) or some other bitter may be required.

C. In most cases, at any rate at first, you must direct your remedies so as to lessen the abnormal irritability of the nervous system. For this purpose you should employ sedatives, such as bromide of potash or ammonia (F. 97), combined with tincture of hop or henbane. In order to lessen any unpleasant effects likely to arise from the sedatives, you may conjoin with them valerian, chloric ether, camphor, or ammonia. It is not advisable to give chloral or morphia unless to procure sleep, as they are apt to disorder the digestion.

H. As soon as you have succeeded in lessening the undue excitability you should attempt to increase the tone of the nervous centres. Where anæmia is present iron is most useful, either in the form of the valerianate, phosphate, or carbonate; if there is no anæmia some preparation of zinc (F. 70) or of manganese will be found more valuable; arsenic (F. 105) and nitrate of silver (F. 47) are favourite remedies with some practitioners. In this and in all other states of the nervous system requiring tonics, cod-liver oil and phosphorus will be of use.

SOFTENING OF THE BRAIN.

Prognosis.—The prospect is very unfavorable, although there is no doubt that where the amount of cerebral structure affected is very small recovery may ensue. If the paralysis resulting from an attack does not quickly improve, ultimate restoration is improbable. As regards embolism and thrombosis, the prognosis is more varied. When the person is young, and the other organs of the body are healthy, an embolus of small size may become broken up, and the patient may perfectly recover. Even in thrombosis the hemiplegia may pass entirely away, although such an event is comparatively rare.

Treatment.—**A.** As, in the majority of cases, the original cause of the softening of the brain is the obstruction of an artery by an embolus or thrombus, or encephalitis that has been excited in the neighbourhood of an extravasation or new growth, it is evident that we have no causal indications to direct our practice.

F. The chief aim must be to improve the quality or increase the quantity of the blood, so that the brain may be supplied with as much nutriment as possible. The diet should be nutritious, and of a digestible character, and in old persons, or where other circumstances seem to render it desirable, it is wise to allow a moderate amount of alcohol. The quantity of this, however, should not be sufficient to stimulate the circulation beyond a slight degree. When you find failure of the appetite you must assist it by means of acids (F. 29), quinine (F. 32), calumba, or some other vegetable tonic; if the bowels are constipated let them be relieved by a mild aperient

(F. 138), but do not give salines or other severe purgatives, lest they should unduly deplete the circulation. Iodine and mercury are often prescribed under the idea that some exudation requires absorption; they should be avoided, as tending to reduce the patient's strength; whilst they exert no beneficial effect on the local disorder.

H. Where you have reason to believe that there is a considerable amount of nervous exhaustion independently of the softening, you may do good by the use of zinc (F. 45), arsenic (F. 104), nux vomica (F. 92), and cod-liver oil. Tonics should be given, however, in small doses at first, and should be very gradually increased, lest they should unduly excite the cerebral circulation.

You may have to treat anæmia or congestion of the brain, paralysis, or sleeplessness. The first three must be combated according to the rules previously given. Sleeplessness mostly arises from cerebral anæmia, and is best relieved by some light nourishment, with or without stimulants, shortly before bedtime. If this fails you may prescribe bromide of potash and Indian hemp (F. 74), chloral (F. 99), or small doses of morphia.

SCLEROSIS OF THE BRAIN.

Prognosis.—The prospect in such cases is most gloomy, the symptoms usually going on steadily from bad to worse. Nevertheless, the duration is often long, some cases lasting many years.

Treatment.—Most authors recommend that the patient's strength should be supported by tonics, such as quinine (F. 32) and other bitters, along with a nutritious diet. Iron (F. 37), strychnia, or zinc (F. 45) may be employed, with or without cod-liver oil, if you can detect any evidence of nervous exhaustion. The employment of electricity has seldom led to any useful results. Dr. Hammond advises that the patient should be treated with chloride of barium, along with tincture of hyoscyamus. He states that such remedies seldom fail to relieve the tremor.

CEREBRAL TUMOURS.

Prognosis.—The prognosis is unfavorable, inasmuch as we have no means that will remove a new growth, or, except in certain cases, prevent its increase. Scrofulous tumours occur chiefly in children; they generally increase slowly, and are often accompanied by tubercular disease in other organs. Syphilitic tumours, although productive of great suffering, are less dangerous if the patient be judiciously treated, but the symptoms are very apt to recur from time to time. In some cases of glioma the disease progresses slowly, in others it is more rapid, but you can only estimate the probability of the duration by carefully watching the symptoms. We have no more power of arresting cancer of the brain than of curing a malignant tumour in any other organ; the prospect is therefore hopeless whenever you feel tolerably sure as to your diagnosis.

Treatment.—A. Where you suspect the tumour to be of a scrofulous nature you must prescribe iodine (F. 114), iron, cod-liver oil, and other tonics. At the same time you should attempt to improve the general health by a carefully regulated but nutritious diet, a residence at the seaside, and exercise in the open air. If you suspect syphilis treat the case with iodine (F. 111), mercury (F. 107), or both combined. You need not fear to use these remedies if the symptoms are at all suspicious, even if the patient denies that he has ever had the venereal disorder, for many persons have recovered who were apparently suffering from specific disease of the brain, but who were unaware that they had ever been affected with a primary sore. In glioma you have no causal indication, but it is generally worth while to try a course of iodide of potash, combined with cinchona (F. 111).

In cancer you can do nothing except support the general health; iodine and mercury should be prohibited.

F. Attention should be paid to the diet and to the condition of the excreting organs, as in all other chronic diseases; but no amount of care in these particulars will remove a cerebral tumour any more than it would absorb a new growth in any other structure.

The symptoms that generally require treatment are those arising from congestion of the brain and neuralgia. The cerebal congestion probably, in most cases, results from the determination of blood to the brain produced by the growth of the tumour. It is accompanied by headache, vomiting, constipation, and a rise of temperature. The application of leeches to the temples, or the use of cupping to the neck, cold compresses or ice bags to the head, active aperients, low diet and perfect rest, afford most relief. In some cases a seton in the neck or arm seems to obviate these attacks. When neuralgia is severe you should use subcutaneous injections of morphia, or the internal administration of chloral (F. 98) or bromide of potash (F. 99). Some authors recommend Indian hemp in combination with bromide of potash (F. 74).

SECTION IV.

NERVOUS DISORDERS THE SEAT OF WHICH IS UNCERTAIN.

CHOREA.

Prognosis.—The prospect is favorable, although occasionally a case dies from loss of sleep and exhaustion. The prognosis is good in proportion to the amount of sleep that can be obtained. The disease is apt to recur, but a second is generally less severe than the first attack. When paralysis follows, it usually disappears after a few weeks.

Treatment (p. 39).—**A.** You should prohibit mental excitement, and insist upon a full amount of sleep. All causes of local irritation must be removed; if a tooth is projecting let the gums be lanced; if carious teeth are causing pain they should be extracted. The source of irritation often exists in the bowels; when such is the case let a full dose of aperient medicine be given, and throughout all the subsequent treatment keep up a free action on the intestinal canal. This is so important that some practitioners have relied on purgatives alone in the treatment of chorea. Do not trust to the report of the patient or his friends as to the state of the bowels, but examine the abdomen and evacuations yourself. Worms have occasionally seemed to constitute the exciting cause, and if there be the least suspicion of their presence you must direct your treatment to remove them. Chorea may be induced by imitation, so that where a person has once suffered from it, or belongs to a family that has shown a predisposition to it, he must not associate with those affected.

F. The diet should be nutritious, but easy of digestion, and in most cases some alcoholic stimulant will be found useful. Where the appetite is defective you may prescribe acids and bitters (F. 29). As a general rule the excreting organs require regulation, and as soon as this is effected the appetite will be restored.

C. As in all other affections of the nervous system, you will have to consider the necessity of giving sedatives. When the symptoms are very urgent you must trust entirely to them, at the same time keeping your patient in bed. Chloral, croton chloral, bromide of potash or ammonia, extract of Indian hemp, and belladonna, are those in most general use. Where these fail you must have recourse to morphia, especially when the sleep is imperfect.

H. Where the symptoms are less urgent you may prescribe nervine tonics. Practitioners vary greatly in their estimate of the value of the drugs of this class. Some recommend zinc, especially the oxide or valerianate, others arsenic, the doses being steadily and regularly increased; Trousseau preferred strychnia; Elliotson large doses of carbonate of iron. In the present day the more soluble forms of iron, such as the phosphate, valerianate, or citrate, are usually prescribed. Physicians formerly recommended the use of leeches, blisters, and setons to the back of the neck in tedious cases, but they are at present generally abandoned.

EPILEPSY.

Prognosis.—This is usually unfavorable, but varies according to circumstances. The disease commences earlier, and is less susceptible of cure when an hereditary predisposition exists. When not hereditary, it is more favorable in young than in middle-aged or old persons. The longer it has existed, and the more frequent the attacks, the less is the chance of treatment being successful. Some are of opinion that where the fits occur only during the night there is less probability of cure than when the patient is usually attacked in the daytime, but this appears to be doubtful. The effects of the disease upon the mental faculties are greatest where the attacks are most frequent and severe.

Treatment (p. 39).—**A.** In some cases where epilepsy has followed an injury to the head and the bone of the skull has been depressed, the removal of the injured part by the trephine seems to have cured the disease; when there has been intemperance either in eating or drinking, or evidence of venereal excess or masturbation can be discovered, such habits must be interdicted. Whenever a well-marked "aura" presents itself, you should instruct the patient, as soon as he feels it, to compress the limb above the part at which the sensation commences, by means of a handkerchief or other ligature; for although the "aura" may arise from a central cause, such as disease in the brain or its membranes, compression of the limb has been known, even in such cases, to ward off the attacks. In some instances the sensation begins in the stomach or colon, and travels upwards; under such circumstances you should pay especial attention to the digestive organs. Do not reduce the patient's strength by violent purgatives, but produce a regular action of the bowels by means of a mild electuary (F. 123) or dinner pill (F. 138). If you have the slightest suspicion that the patient is suffering from worms, the treatment must be directed to remove them.

C. The chief point in the treatment of epilepsy is the employment either of sedatives or of tonics; in almost every case the former are required. Belladonna, conium, or hyoscyamus was formerly prescribed, but of late years bromide of potash has been more generally used. It should be given in full doses, such as twenty to thirty grains, two or three times a day, and may be combined with belladonna or Indian hemp. Morphia is seldom of much benefit in warding off the attacks.

H. Most practitioners employ some form of nervine tonic. The preparations of zinc are chiefly given, such as the oxide (F. 16), valerianate (F. 70), or phosphate; when anæmia is present you may use iron, with or without zinc. Formerly nitrate of silver was a popular remedy, but, in addition to the chance of the patient's skin being permanently discoloured, its frequent failure has caused it to be rarely prescribed in the present day. The salts of copper have been much praised by some practitioners, but they are seldom of any permanent use.

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Some practitioners have divided the nerves leading to the wound; some have forcibly stretched them; even amputation of the limb has been practised, so as to exclude all possibility of any irritation being maintained by the original injury. These operations are, however, seldom performed in the present day. In rheumatic cases the bowels should be freely opened by a dose of calomel (F. 145) or croton oil, lest any impacted fæces should be keeping up irritation of the nervous system.

B. Formerly it was the custom to bleed freely, but this is now rarely employed. The bowels in all cases should be freely opened.

C. We have to depend chiefly on sedatives, and

Blisters, setons, and moxas were also formerly much in vogue. I have seen good results from a seton in the neck when the patient was plethoric and otherwise in good health, but, as a general rule, they are rarely of service.

HYDROPHOBIA.

Prognosis.—This is always fatal, but you should bear in mind that persons of a nervous temperament may exhibit symptoms resembling this disease after being bitten by a healthy dog. Difficulty of swallowing may arise from inflammation of the œsophagus, hysteria, and other causes in persons who have not been exposed to the poison of rabies.

Treatment (p. 29).—**A.** Although we are unable to obviate the effects of the diseased saliva after it has entered the system, yet we may lessen the patient's sufferings by preventing all circumstances likely to irritate him. No attempt at swallowing should be permitted as soon as the diagnosis has become clear, and the strength should be supported entirely by nutritive enemata. The room should be kept dark, all noises avoided, and as little conversation as possible permitted. If the bowels are confined you may, with advantage, give a dose of calomel, or administer an aperient enema, but you should allow no medicine by the mouth.

B. Formerly free venesection was recommended, and no doubt in plethoric persons some relief was thus obtained. But ordinarily it is inadmissible, because the difficulty is to support the patient's strength, and the loss of blood tends to increase his debility.

C. Our only hope of affording relief is in the free administration of sedatives. In the early period you may, with advantage, inject subcutaneously morphia or atropia, frequently repeating the dose. If the patient is very violent you may administer chloroform or ether by inhalation, but this had better be avoided towards the end of the attack.

In some cases I have seen the patient soothed by frequent enemata of chloral (forty grains in each). The bromide of potash has failed to produce any good results. The Calabar bean has been also used in some cases, but with no advantage.

TETANUS.

Prognosis.—This is very unfavorable in traumatic cases, but a considerable proportion of those attacked with the rheumatic form recover. The more slowly the symptoms come on the greater the probability of cure. The fewer and the less severe the attacks of spasm the more hopeful is the prospect. In traumatic cases the number of recoveries increases in proportion to the length of time that has elapsed between the receipt of the injury and the development of the symptoms.

Treatment (p. 29).—**A.** The first point is to remove any circumstance likely to keep up irritation. In traumatic cases the wound must be carefully examined, and if splinters of wood or bone be present they should be at once extracted.

Some practitioners have divided the nerves leading to the wound; some have forcibly stretched them; even amputation of the limb has been practised, so as to exclude all possibility of any irritation being maintained by the original injury. These operations are, however, seldom performed in the present day. In rheumatic cases the bowels should be freely opened by a dose of calomel (F. 145) or croton oil, lest any impacted fæces should be keeping up irritation of the nervous system.

B. Formerly it was the custom to bleed freely, but this is now rarely employed. The bowels in all cases should be freely opened.

C. We have to depend chiefly on sedatives, and the subcutaneous injection of morphia or atropia should be used to relieve the patient's sufferings. In some cases the inhalation of ether or chloroform seems to have been of use, but to effect any permanent good it should be frequently repeated. Chloral (F. 98) and bromide of potash (F. 99) may be employed when morphia is inadmissible. The sedatives chiefly recommended in the present day are tobacco, woorara, and the Calabar bean.

Mr. Curling is of opinion that tobacco is the most valuable sedative we possess in this disease. An enema of it may be employed two or three times a day, or an infusion applied to a blistered surface. Nicotine has been given subcutaneously, in doses of half to two thirds of a drop two or three times a day. As it is slightly acid when diluted with water we are advised to add a little potash before injecting it. It should, however, be remembered that nicotine is a very dangerous remedy. The extract of Indian hemp, in doses of one quarter of a grain to two grains every three hours, has been also recommended. The Calabar bean is given in the shape of an extract (one eighth of a grain gradually increased). The curare or woorara has been employed in doses of one fiftieth of a grain, increased to three tenths of a grain. It is said that of twenty-two cases treated with it eight recovered, but this favorable statement has not been confirmed by other practitioners. Ice bags to the spine have not proved of permanent benefit.

CHAPTER XIV.

DISEASES OF THE SPINAL CORD.

SECTION I.

ACUTE DISEASES OF THE SPINAL CORD.

CONGESTION AND HEMORRHAGE.

Prognosis.—These cases are accompanied by great danger when embarrassment of the breathing points to an affection of the upper part of the cord. If only the lower limbs are paralysed the prospect is more hopeful, as the muscles sometimes slowly regain their power, although, as a general rule, this is not the case.

Treatment (p. 23).—**A.** In case you have reason to suspect the patient to have been affected with syphilis, mercury or iodide of potash should be used.

B. You are advised by some authors to apply a number of leeches to the spine or to the anus, but as there is seldom much, if any pain, such a plan of treatment is not generally followed. Dry cupping over the spine in all cases may be freely practised. The bowels should be purged, and for this purpose saline aperients (F. 135) are to be preferred, the drain upon the vascular system being maintained for some time. The application of ice bags to the back is recommended by most authors. They should be used in the early stage of the complaint, and whenever the symptoms are of a threatening character; but after a few days poultices to the spine prove more grateful to the patient. Large doses of ergot (one drachm of the liquid extract) are prescribed by some practitioners, on the supposition that the blood-vessels of the cord may be thus contracted. Belladonna should be avoided, lest dilatation of the smaller arteries and capillaries should be produced, but Dr. Hammond looks upon it as useful when the sphincters are affected.

D. The patient must be kept in the recumbent position, and some authors advise that the legs should be placed on a lower level than the body, so as to facilitate the flow of blood from the spinal veins.

E. The diet in the early stage should consist of beef tea, milk, and farinaceous food, and no alcoholic stimulants should be permitted, unless signs of depression show themselves.

SPINAL MENINGITIS.

Prognosis.—Most of the cases of idiopathic spinal meningitis recorded by authors are of a doubtful character. The complaint is usually the result of disease of the vertebræ, or it occurs in persons reduced in health by some severe illness. Although cases of recovery are recorded death is the ordinary termination, usually within six days after the commencement of the attack.

Treatment.—Spinal meningitis set up in the course of other diseases usually escapes notice during life. Where it is suspected you should prescribe full doses of opium, together with the application of hot poultices and fomentations to the spine, and insist upon perfect rest. Some authors recommend the employment of leeches, and the use of mercury, so as to produce ptyalism.

ACUTE MYELITIS.

The prognosis and treatment are the same as in acute congestion of the spinal cord.

SECTION II.

CHRONIC DISEASES OF THE SPINAL CORD.

LOCOMOTOR ATAXIA.

Prognosis.—The prospect of recovery is very unfavorable, and especially so when the disease has been of long duration. It is not, however, uncommon for the progress of the complaint to be for a time arrested, although the symptoms may afterwards again increase.

Treatment (p. 32).—**A**. When you find marked indications of any general disorder you ought to direct your treatment for its removal. Thus, in case the patient has suffered severely from constitutional syphilis, you should prescribe perchloride of mercury (F. 106), or iodide of potash (F. 112), or if there be also anæmia you may give iodide of iron (F. 114). If he has been liable to gout or rheumatism let your prescription be framed so as to relieve the general condition.

F. The diet should be carefully regulated, and the functions of the bowels and kidneys attended to, but in most cases there is no complaint of any abnormal state of digestion or assimilation.

H. Innumerable remedies have been proposed for the treatment of locomotor ataxia, but none of them seem very efficacious. When the disease is quickly progressing metallic tonics are of most service, especially nitrate of silver (F. 47), zinc (F. 45), or iron (F. 36). In more chronic cases you may give cod-liver oil and preparations of phosphorus with advantage. Ergot is recommended in the early stage, and is often of decided benefit.

Belladonna and extract of Indian hemp (F. 74) have been employed where there is much pain, and when these are ineffectual morphia should be injected subcutaneously.

Faradisation has been much used where marked cutaneous and muscular anæsthesia are present.

INFANTILE PARALYSIS.

Prognosis.—When a whole limb is affected the prognosis is unfavorable, in proportion to the length of time the paralysis has existed. If improvement has not occurred within six months after the appearance of the complaint, or if the affected limb be much reduced in size, change for the better is not to be looked for.

Treatment (p. 32).—During the early stage you must remove any irritation, such as inflammation of the gums from the pressure of the teeth, worms in the intestinal canal, or constipation.

B. The bowels should be purged, and a free evacuation maintained. Hot poultices and fomentation may be applied to the spine, but leeching or other means of depletion are seldom required.

F. In the chronic stage your efforts must be directed to strengthen the general health of the child by means of iron, quinine, strychnine, cod-liver oil, and other tonics. Residence at the sea-side, bathing in the sea, and other means of improving the general health should be resorted to.

H. In order to maintain the power of the affected muscles electricity should be steadily and perseveringly employed. Frictions and shampooing may be also used, and the child should be encouraged to exercise the affected limbs by the assistance of games, india-rubber expanders, and go-carts, or by attempting to walk whilst supported by straps from the hands of its nurse.

MUSCULAR ATROPHY.

Prognosis.—This disease, when only partial, may be arrested in its early stage, and even when general it may not proceed to a fatal termination. Of twenty-eight cases collected by Dr. Roberts the mean duration was thirty-eight months. Of these, four ended in recovery, with a mean duration of fourteen months, thirteen in permanent arrest, with a mean duration of twenty-seven months, and eleven died with a mean duration of more than five years. The progress of the malady is rarely at a uniform rate; it usually seems for a while to cease with the destruction of the implicated muscles, and to recommence its ravages after a more or less lengthened interval.

Treatment.—**A.** If any symptoms of constitutional syphilis can be discovered you may use mercury (F. 107) or iodine (F. 111). There are rarely any other causal indications to direct your treatment.

F. In case you can detect any imperfection in the action of the secreting or excreting organs you must attempt to improve their condition. Tonics are usually given, such as iron (F. 37), zinc (F. 44), or strychnia (F. 94).

H. Most writers agree in recommending the use of electricity. It should be employed regularly and perseveringly, and each affected muscle should be in turn submitted to its action. Dr. Roberts advises that no sitting should exceed ten to fifteen minutes, and that rarely more than one minute should be allotted to each muscle.

For the secondary pains the subcutaneous use of morphia is most useful, and in severe cases it may be employed regularly once or twice a day.

PARALYSIS AGITANS.

Prognosis.—Cases occurring in early life are occasionally cured, but when it attacks a patient of advanced age, it generally resists all attempts to remove it. If the tremor is confined to one muscle, or group of muscles, for a length of time, we may reasonably hope it will not extend. In the incurable cases the course is very slow, and the disease often exercises little effect on the general health.

Treatment (p. 39).—**F**. The health must be improved by means of good diet, a moderate amount of alcoholic stimulants, and, if possible, by change of air and scene. Any depressing circumstance, or severe excitement of the mind or body tends to increase the tremors.

H. In some instances cod-liver oil has proved exceedingly useful, more especially in cases of long continuance. In the more recent valerianate of zinc (F. 70), carbonate of iron, and strychnia (F. 94) succeed best.

Various sedatives have been employed. The Calabar bean has been tried unsuccessfully; the inhalation of chloroform appears to check the movements for a time, but they return as soon as the effects of the drug have passed away. The tincture of hyoscyamus in half-drachm doses has been useful in some cases.

The interrupted current of electricity is less efficacious than the constant galvanic current.

WRITER'S CRAMP.

Prognosis.—In recent cases, and where rest of the affected muscles can be obtained, benefit may be looked for, but in those that are of long standing, and where the patient is obliged to continue his occupation, little hope of a cure can be expected. Even when the patients have taught themselves to write with the left hand, its muscles have been sometimes attacked by the disorder.

Treatment (p. 39).—**A**. Perfect rest is essential. In slight and recent cases it may be sufficient to forbid all writing for two months, but in those that are more chronic, rest for six months is requisite. Where this cannot be obtained the use of a thick cork penholder, and of very soft pens, may be recommended. The application of a band of sticking-plaster, or of an elastic bandage to the wrist, has occasionally afforded relief.

F. The diet should be regulated, and any symptoms of dyspepsia corrected. Tonics, such as iron, quinine, or strychnia, may be prescribed when there appears to be a necessity for them.

H. Electricity has been employed as a means of strengthening the muscles. The continuous current is generally recommended, although some have employed faradisation successfully. The use of liniments, whether stimulating or sedative, usually fails to produce any good effects. The subcutaneous injection of morphia, atropia, and arsenic, has hitherto proved valueless.

METALLIC TREMORS.

Prognosis.—These arise from the inhalation of mercury or lead. The prognosis depends upon the length of time during which the patient has been exposed to the metal, and upon the amount of the paralysis.

Treatment (p. 39).—**A**. Of course the first point is to remove the patient from his occupation, and to eliminate, as far as possible, the poisonous material by means of iodide of potash (F. 113), sulphur baths &c., or by diuretics (F. 159). When it has arisen from mercury common salt is useful.

F. The strength should be supported by tonics, such as zinc, iron, or quinine, by a liberal diet, and a moderate amount of alcoholic stimulants.

H. The local application of electricity is the most successful means for restoring strength to the affected muscles.

CHAPTER XV.

FEVERS.

IN health the temperature of the body is maintained at a uniform standard, although the activity of the processes engaged in the production of heat must be constantly varying, but in disease the equilibrium is often disturbed, and the temperature rises many degrees above the normal point. The condition accompanied by an increase of heat is termed fever, and it may arise either from some local inflammation, such as pneumonia, or it may be the result of a general affection of the system, as in measles or scarlatina. In either case the thermometer enables us to measure the exact amount of heat present in the part of the body to which we apply it, and hence the value of this method of investigation.

But an elevated temperature is by no means the only symptom of the febrile state; almost every structure shows signs of functional derangement. The action of the heart is increased, and the breathing becomes more rapid, as it is necessary that a greater volume of air should be brought into contact with the blood when driven more quickly through the lungs. The nervous system sympathises with these altered conditions, and muscular feebleness, restlessness, want of sleep, and in some cases delirium, show themselves. The digestion is disturbed, the appetite lessens, the tongue becomes foul and clammy, thirst is complained of, and the bowels are confined. The excretions are almost always diminished, the amount of water thrown off from the body is decreased, and we consequently find the skin dry and the urine scanty and high-coloured.

But although the thermometer is the best means of measuring the amount of fever, you should always take into consideration the other circumstances before deciding as to the nature of a case. In children, for instance, the temperature is often increased suddenly by very trivial causes, and in old persons you may have great danger, even when the heat of the skin is but little elevated. On the other hand, there is no doubt that all very high temperatures are dangerous. This probably arises from the increased heat depressing the vitality of the blood and tissues. In any case of fever, therefore, although we may be unable to put a stop to the cause producing it, we are called upon to moderate the excess of temperature, and thus to prevent its injurious action upon the various organs of the body.

Different remedies have been employed as means of lessening the amount of heat in fever. In typhoid, hemorrhage from the bowels is not an uncommon complication, and a fall in the temperature usually follows it. You might, therefore, expect that venesection would be frequently resorted to as a febrifuge; but in the present day bloodletting is so badly borne that it is seldom used for this purpose, though, formerly, it was extensively employed, and no doubt with great benefit. But, instead of the removal of blood, the withdrawal of serum from the portal system by means of aperients is a valuable method of reducing the temperature. Saline purgatives are best adapted for this purpose, and there are but few cases in which they are not useful. It must be remembered that, in addition to the withdrawal of the serum, they stimulate the various glands that pour their secretions into the intestinal canal, and thus remove various effete materials from the system.

As the perspiration is usually suppressed in fever, the diminished evaporation from the surface of the body assists in producing the elevation of temperature. Consequently, the employment of diaphoretics has been always a favourite method of treatment. Acetate of ammonia, citrate of potash, and spirit of nitrous ether are popular remedies, and can be always employed with safety, generally with advantage. In some cases jaborandi or the compound ipecacuanha powder is of use, but the former of these should be used with caution, as it sometimes proves very depressing.

Salicylic acid and salicylate of soda are valuable febrifuges, especially in acute rheumatism, but as they are apt to produce deafness and other unpleasant symptoms the dose should be reduced as soon as these show themselves. Quinine is also useful in fevers, especially when they are of a low type, or when the elevation of temperature shows any tendency to periodicity. Large doses, such as ten grains, are recommended by some authors, but three or four grains every three or four hours are usually sufficient. Digitalis is a favorite febrifuge with some practitioners, and may be given along with quinine.

The application of cold water to the surface of the body is the most certain means of reducing an elevated temperature. In slight cases it is sufficient to sponge the skin; in others the patient may be wrapped in a wet sheet. When the heat of skin is excessive, and especially when it is accompanied by delirium, the cold bath is very efficacious, and should be repeated from time to time according to the effects produced. Delirium often ceases, and a sound sleep is produced, by a single bath.

The use of the cold bath in the treatment of fevers has been more general on the Continent than in this country. Liebermeister states that, "in typhoid fever in adult patients the full-length cold bath of 68°

Fahr., or lower, is to be preferred. The same water can be used for several successive baths for the same patient; the bath-tub remains standing full, and the water representing about the temperature of the room answers the purpose without change. The duration of the bath should be about ten minutes. If prolonged much beyond that it becomes unpleasant to the patient, and may even prove a damage to him. If feeble persons are much affected by the bath, remaining cold and collapsed for a long time, the duration should be reduced to seven, or even to five minutes. A short cold bath like this will have a much better effect than a longer one of lukewarm water. Immediately after the bath the patient should have rest; he is therefore to be wrapped up in a dry sheet and put to bed (which may, with advantage, be warmed, especially at the foot), lightly covered, and given a glass of wine. In dealing with very feeble patients, one may begin with baths of a higher temperature, say 75°, although of course they will produce less effect. A method especially to be recommended in such cases, if the surroundings permit, is that recommended by Ziemssen, of baths gradually cooled down, beginning with about 95°, and adding cold water gradually until the temperature is reduced to 72°, or below. These baths should be of longer duration.

"As a rule, in somewhat severe cases I have the temperature taken every two hours, day and night. Whenever the temperature in the rectum reaches 103°, or in the axilla 102·2°, a cold bath is given. In children, or in persons whom one has reason to suppose capable of great resistance to the influence of heat, the temperature which calls for the bath may be placed higher, say 104° in the rectum, or 103° in the axilla. In those, on the contrary, with less than the average resisting power, it may be well to employ the bath before so high a temperature has been reached, and, according to the circumstances of the case, give a shorter bath, or a warmer one, or the gradually reduced bath of Ziemssen.

" Above all things, it is important for the physician to free himself from the delusion that anything essential can be accomplished by one bath or by a few baths."

" Hemorrhage from the bowels constitutes one of the contraindications to the use of cold baths. The same thing, of course, holds true to a still greater degree in case of perforation of the bowels. I have, thus far, ordered the baths to be entirely discontinued, as soon as even slight hemorrhage from the bowels occurred. An important contraindication, however, is found in the existence of a high degree of weakness of the heart's action. When the force of the circulation is so reduced that the surface of the body is cold, while the interior is very hot, there is no hope whatever that a further cooling of the surface will make any difference to the interior."*

In all long-continued fevers, as well as in diseases of the brain and spinal cord, sloughing of the nates is apt to occur from the pressure of the body. You ought not to trust to the report of your nurse that the back is in a good state, but each day you should examine for yourself. As soon as any redness is detected you should have the patient placed upon a circular air-pillow or spring mattress, or, what is better, upon a large water-pillow. If the redness be slight, it will be sufficient to defend the part with a piece of thick leather, covered with soap plaster; but when it is more decided you should try to prevent sloughing by other measures. Some advise the part to be washed with spirits of camphor, or a weak solution of nitrate of silver; others recommend that a mixture of collodion and castor oil or a solution of gutta percha in chloroform should be painted over the inflamed surface.

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* Liebermeister on "Typhoid Fever," Ziemssen's 'Cyclopædia of the Practice of Medicine,' vol. i, p. 208.

When sloughs have formed you had better apply warm linseed poultices. The late Dr. Murchison advised that a mixture of two parts of castor oil and one of balsam of Peru, spread on linen, or that pieces of linen saturated with carbolic oil, should be laid on the sore, and covered with a poultice, to be changed three or four times a day. Yeast, carrot, chlorine, and charcoal poultices, or a few drops of carbolic acid or turpentine in the ordinary linseed poultice, are very useful. To correct fetor, the parts are to be washed each time they are dressed with a lotion of carbolic acid (fifteen grains to the ounce) sulphurous acid (one in six), chlorinated soda (Liq. Sodæ Chloratæ four drachms, water eight ounces), or a weak solution of permanganate of potash. After the sloughs have separated, the sores are to be dressed with some stimulating lotion, and if sloughing returns, strong nitric acid must be carefully applied, followed by poultices.

In every case of fever you should also examine the hypogastric region daily, lest the bladder should be distended with urine. Do not neglect this, even if you are assured by the nurse that the patient is passing his water naturally, for a portion may dribble away, on account of the bladder being incapable of contraction. If distended of course the catheter must be used regularly.

INFECTIOUS FEVERS.

These form a most important group of diseases. Unfortunately we have no remedy that is able either to cure them or shorten their duration, and we are consequently obliged to content ourselves with placing the patient in the best hygienic condition, and with combating such complications as may present themselves. The following may be taken as general rules:

The patient should be confined to bed during the whole course of the fever, and all bodily or mental exertion strictly forbidden. The room must be maintained at an equable temperature (about 60° Fahr.), a fire being kept up both night and day during the colder part of the year. Free ventilation is of the utmost importance, and all curtains, screens, and other furniture likely to prevent this should be removed. The room should be kept quiet and light excluded if the patient shows any tendency to mental excitement or delirium. He may partake freely of liquids, such as water, iced water, toast or barley water; or, if preferred, lemon juice well diluted, or oranges and other fruits of the same kind may be given. The food should consist of liquids; it may be given frequently, say every three or four hours, and in moderate quantities at a time; milk, milk-and-soda or seltzer water, beef tea, chicken broth, and farinaceous food, usually answer best. It is wiser to procure sleep by quiet and darkness than by drugs, but where the patient seems to be exhausted from want of rest, small doses of chloral, bromide of potash, henbane, or morphia, may be employed.

As regards medicines, we must distinguish two conditions with which the fever may coexist. In one the symptoms are of moderate severity, and the strength and pulse tolerably good. In the other there are, from the first, signs of great depression, or these may come on during the course of the fever; the pulse is quick, small, and compressible, the first sound of the heat feeble, the tongue dry, and the strength much reduced. In the former of these states it is the custom to give some slight aperient, and to prescribe one of the ordinary febrifuge mixtures, such as one containing citrate of potash or acetate of ammonia (F. 175). In the latter you should have recourse to stimulants, as carbonate of ammonia and bark (F. 50), or quinine (F. 52), along with alcohol, strong beef tea, chicken broth, soup, and other forms of concentrated nourishment; in fact, you aim at maintaining the power of the heart and supporting your patient until the fever has had time to run its course.

As these disorders tend to propagate themselves by infection, you must be careful that all the excretions are carefully removed and destroyed. Carpets, curtains, &c., should be taken away, and the utmost cleanliness enforced. The chance of infection may be further lessened by using solutions of chloride of lime, chloride of zinc, carbolic acid, or permanganate of potash. It is a good plan to suspend in the room a sheet or towel wet in one of these solutions.

All the infectious fevers are apt to give rise to inflammation of various organs, which vary in their intensity, partly with the age and previous health of the patient, partly with the nature and duration of the fever. In many cases these are more dangerous than the malady from which they have arisen, and they often require skilful and energetic treatment.

A certain amount of weakness and ill health very commonly follows the recovery from diseases of this class. Various local and general maladies are apt to arise, the patient should, therefore, be closely watched, and any subsequent derangement of health carefully treated.

SECTION I.

FEVERS ATTENDED WITH AN ERUPTION ON THE SKIN.

MEASLES.

Prognosis.—The prognosis is generally favorable, and where death takes place it is usually from some local complication. In children between four and five years of age there is little risk of a fatal result; whilst young infants often suffer severely. When adults are attacked there is seldom any danger, but the complaint frequently leaves general weakness and ill health. Occasionally the eruption is slight, or its colour unusually dark, and along with this the pulse is rapid, small, and fluttering; there is great prostration, quick, shallow breathing, and muttering delirium. Such cases are very apt to terminate fatally. A very high temperature is also dangerous. Convulsions before the occurrence of the rash are less serious than might be expected, the cerebral symptoms usually subsiding as soon as, or before, the spots appear; but if convulsions come on late in the course of the disease the prognosis is grave. Hoarseness or loss of voice ought to be carefully watched, as these often precede or accompany pneumonia. Capillary bronchitis and pneumonia are always serious complications, being the usual causes of death; however favorably the case may have proceeded in the early stage, you should speak with caution as to the result if either of these makes its appearance. The younger the child in which the chest affections occur the greater is the danger. If the temperature remains high after the eruption has begun to fade, you should dread some complication, especially of the lungs or bronchial tubes.

Treatment.—In an ordinary case there is little occasion for interference during the febrile stage. You may prescribe any febrifuge medicine (F. 175), and follow the general rules laid down for the treatment of infectious disorders. If the cough be troublesome, small doses of ipecacuanha wine will give relief; in case an aperient is required you should select one that will not produce irritation, as the complaint is apt to be attended or followed by diarrhœa; you therefore avoid calomel, jalap, and other drastic purgatives, and order castor oil, magnesia, or an enema. If the temperature rise above 102°, you may employ cold or tepid sponging. When the disease is ushered in with great depression, you must have recourse to ammonia, ether, cinchona, or quinine, supporting the strength, at the same time, with beef tea, soup, milk, and brandy or wine. If the extremities are cold you may also use the warm bath to hasten the appearance of the eruption, or if the patient be too much exhausted to bear it you should apply hot poultices, sprinkled over with mustard, to the trunk and extremities.

The chief complications of measles are croup, bronchitis, pneumonia, which is usually of the catarrhal form, diarrhœa, and, more rarely, severe bleeding from the nose or other mucous membranes.

Where laryngeal inflammation shows itself, the patient must be kept in an atmosphere of steam; he should remain in bed, talking and all excitement being strictly forbidden. The application of leeches to the throat is rarely necessary, for the strength is already so much reduced by the fever, that the loss of blood cannot be borne. It is a better plan to trust to poultices, or to constant fomentation by means of a large sponge wrung out of hot water. If there be much dyspnœa, emetics of ipecacuanha should be employed to procure the removal of the mucus; be careful not to use tartar emetic, on account of the tendency to diarrhœa. In extreme cases you may have to perform tracheotomy. If diphtheria presents itself the treatment must be conducted according to the principles laid down for the management of that disease.

In pneumonia following measles you seldom require to employ leeches, but should content yourself with frequent doses of ipecacuanha in the first stage, substituting ammonia, bark, or quinine if the pulse show a feeble condition of the heart. A full supply of liquid nourishment, with or without alcohol, is almost always requisite.

Convulsions in the early stage are best treated by means of a hot bath and some mild aperient. If they are frequently repeated, or if they appear after the disappearance of the eruption, you must employ bromide of potash or chloral; in extreme cases you should control them with the careful inhalation of chloroform or ether.

Diarrhœa ought to be carefully watched, and, if excessive, should be checked. You should order some astringent, such as logwood or bismuth, or may use an enema containing tincture of opium. The abdomen must be covered with a hot poultice or spongio-piline if there be much pain, and the patient should be restricted to a diet composed of milk and farinaceous food.

RÖTHELN OR GERMAN MEASLES.

Prognosis.—This is always favorable, excepting when it is complicated with capillary bronchitis or pneumonia, which, however, are less apt to occur than in true measles. You should remember that a previous attack of true measles confers no immunity from this, nor is the fact of having suffered from German measles any safeguard against the ordinary form.

Treatment.—This is the same in every respect as that required for measles.

SCARLATINA.

Prognosis.—Be cautious in your prognosis, for the complications are so dangerous that death may result where the initial symptoms have been of the mildest character. Some families are especially liable to suffer severely from scarlatina, and three or four children may die in one household, even when the epidemic is in other cases exceptionally mild. The mortality is greatest in infancy and early childhood, but becomes less after five years of age. Scarlatina is very fatal when it occurs in women who have been lately confined. Where the fever is ushered in with great depression, a feeble pulse, dry tongue, and imperfectly developed or dark coloured rash, there is great risk. Hemorrhage from the mucous membranes is usually of evil omen; profuse discharge from the nose is an unfavorable sign, and you must speak with extreme caution of cases that suffer from severe ulceration of the fauces or sloughing of the tonsils, or where a hard brawny swelling of the neck is present. A high temperature is dangerous, and if it persists when the rash is fading you may look for some serious complication. Slight nocturnal delirium is not necessarily a bad symptom, but when the wandering is present during the day, and is associated with other signs of nervous disorder, such as muscular twitchings and restlessness, or with vomiting or severe diarrhœa, it should be viewed as a sign of very serious import.

The prognosis of scarlatinal nephritis depends on the quantity of urine that is passed, the amount of dropsy, and the presence of convulsions or coma. Scarlatinal rheumatism generally terminates favorably, but the cases of suppuration in the joints that sometimes occur are fraught with great peril to life.

Treatment.—The general treatment for other febrile diseases must be carefully carried out. The patient should, however, be always kept in bed for many days after the fading of the rash, and for the next three weeks every means should be employed to protect him from cold, in order to avert inflammation of the kidneys. As the temperature is usually high in scarlatina, cold sponging is almost always required. In some cases the cold bath is necessary, and may be frequently repeated.

As soon as the rash disappears it is a good plan to order a warm bath every night, so as to expedite the desquamation of the skin. The patient should be rubbed over with oil or lard after the bath, in order to prevent the falling off of the fine branny particles of the skin, which are the chief means of propagating the complaint. The urine must be frequently tested for the first two or three weeks, so that the earliest indications of acute nephritis may be observed, and necessary treatment adopted. The bowels ought to be kept open, but calomel and all other drastic purgatives should be avoided, unless absolutely requisite. Some practitioners have great confidence in carbonate of ammonia, others in chlorine, others in acetic acid or the mineral acids, but there is no evidence that any of these drugs have power to cut short the duration of the fever, or conduct it to a favorable issue.

In cases ushered in with great depression and a low temperature you must employ the hot bath, or hot poultices to the trunk and extremities, whilst you support the strength of the patient with ammonia, bark, or quinine, alcohol, beef tea, and other easily assimilated forms of nourishment. When there is excessive heat of the skin and delirium, you should prescribe the cold bath and a febrifuge mixture.

In the treatment of severe coryza, which is such a serious symptom in children, the nostrils ought to be frequently washed out with warm water, or water containing a small quantity of common salt or chlorate of potash. In ordinary cases it is sufficient that the patient should use some simple gargle to the throat, such as one containing chlorate of potash (F. 197), for the inflammation generally subsides spontaneously shortly after the disappearance of the rash, or in children who cannot gargle the same salt may be employed in the form of spray. When there is severe ulceration, or a tendency to sloughing shows itself, you may prescribe with advantage either a gargle, or a spray of carbolic acid, sulphurous acid, or permanganate of potash, whilst the throat may be enveloped in a hot poultice or in a piece of spongiopiline. In some children relief is obtained by the use of steam inhalations, whilst in the case of adults the constant swallowing of small pieces of ice appears to be more useful. Where an abscess threatens, an early opening is requisite in order to prevent the matter burrowing. The more severe the inflammation of the throat the more urgent is the necessity for quinine, bark, ammonia, and alcohol. Cases in which a brawny state of the integuments of the neck occurs more especially require a liberal supply of stimulants and tonics, and should be carefully watched. Do not use blisters in scarlatinal sore throat, as sloughing is apt to be produced by them, on account of the depressed condition of the system.

Where a hemorrhagic tendency manifests itself you must have recourse to general and local astringents, such as perchloride of iron, gallic acid, or ergot, assisted by nutritious diet and alcoholic stimulants, especially port wine.

Acute nephritis, acute rheumatism, pleurisy, and pericarditis, all of which are apt to show themselves as complications of scarlatina, must be treated on general principles. You ought, however, to remember that your patient is not in a state to bear any depression, his strength being already exhausted by the fever.

SMALLPOX.

Prognosis.—The prognosis is always grave, because the complications may prove fatal in cases that would otherwise pass through the disease without danger. Persons who have been properly vaccinated suffer but slightly in comparison with those who have not undergone this operation. Mr. Marson states that of those who showed four or more well-marked vaccine cicatrices on the arms only one per cent. died, whilst the mortality was thirty-seven per cent. amongst the unvaccinated. There is least risk between the ages of ten and fifteen, below five the complaint is often fatal, and after forty the danger increases in proportion to the age of the patient. The pregnant state greatly increases the risk, and abortion usually follows an attack.

Previous ill-health and habits of intemperance greatly lessen the chance of a favorable termination, and delirium tremens is apt to show itself during the course of the disorder. The amount of the eruption is, to a certain extent, a measure of the danger. According to Mr. Marson, fifty per cent. of the unvaccinated who are attacked with the confluent form die, whilst eight per cent. of those affected with the semi-confluent, and only four per cent. of those presenting the distinct form of eruption, perish. He also remarks that "all symptoms indicating malignancy and a putrescent state of the blood should be looked upon as very unfavorable signs. Hemorrhage from any of the mucous surfaces, purpura, blood effused under the conjunctiva, or into the smallpox vesicles, should all be regarded as very dangerous symptoms." Great heat of skin is an unfavorable sign, and Wunderlich states that if the temperature in the secondary fever several times reaches above 104° the case is a dangerous one.

Very severe lumbar pain and excessive vomiting, persisting after the appearance of the spots, are signs of ill-omen. Cases in which delirium sets in early, or where there is laryngeal or tracheal complication, are dangerous. Death may occur at any period, but the most dangerous time is between the eighth and thirteenth days. Varioloid is very rarely fatal.

Treatment.—The ordinary rules for infectious fevers must be carried out. The bowels should be kept moderately open during the whole course of the disease by some saline or other mild aperient. Where diarrhœa takes place, as is not unfrequently the case, it must be checked if the patient's strength appears to be reduced by it. In confluent cases it is advisable to cut the hair at an early period, to prevent the inconvenience arising from an accumulation of the discharge. The throat is usually sore and adds to the distress of the patient; it is best treated by some mild gargle, such as one of chlorate of potash (F. 197), or the fauces may be kept moist by the use of red or black currant jelly. Some prefer an astringent gargle, such as one containing perchloride of iron or infusion of roses.

Sleeplessness is a most troublesome symptom, and requires the employment of chloral (F. 98) or morphia (F. 64). If, however, there is copious expectoration or salivation, you must be careful in the use of sedatives, lest the breathing become embarrassed by the accumulation of fluid in the larynx or bronchial tubes.

Patients suffering from delirium must be carefully watched, lest they injure themselves or others. If it be violent, small doses of morphia and tartar emetic are most useful; in milder cases you will obtain more benefit from alcohol, good diet, and quinine (F. 32), at the same time that you procure sleep at nights by a dose of morphia. Where a female patient is suffering from gonorrhœa the greatest attention should be paid to cleanliness, for sloughing is apt to occur under such circumstances.

In the treatment of the complications of smallpox you must never lose sight of the fact that your patient is already greatly reduced in strength by his illness, so that your efforts must be directed to sustain his vital powers, as soon as the secondary fever has made its appearance, by quinine (F. 37), acids (F. 29), and a liberal diet. Pleurisy is best treated by poultices and fomentations externally, and by small and frequently repeated doses of opium. Pneumonia is generally of an asthenic character, and requires the use of ammonia (F. 187), bark, wine and a liberal diet. In bronchitis you may place the patient in an atmosphere of steam if the symptoms are severe; but if mild, some expectorant medicine will usually suffice to relieve him. Boils and abscesses require assiduous poulticing, and any collection of pus should be early and freely opened. Their occurrence usually indicates the necessity of a tonic and stimulating treatment.

Various measures have been proposed to prevent the disfigurement caused by the pustules on the face. Mr. Marson advises that we should "wait until the pustules have discharged, and the discharge has begun to dry; then put on some of the best olive oil, or a mixture of one third of glycerine and two thirds of rose water; some of this may be applied twice a day for a few days, until the scabs begin to loosen. Cold cream, oxide of zinc, or olive oil and lime water form good applications, or if the discharge is thin and excoriating, calamine mixed with olive oil. The patient should be warned not to allow the scabs to dry and remain some time on the nose and other parts of the face, particularly on the forehead and near the end of the nose; when this takes place the dry scabs themselves leave deep marks in the skin, worse than the eruption of smallpox itself."

CHICKEN-POX.

The *prognosis* is always favorable. It usually ends in recovery in a few days.

Treatment.—The complaint requires little treatment; that recommended for acute infectious fevers may be employed.

TYPHOID FEVER.

Prognosis.—The average mortality is about seventeen per cent. Death may occur at any period of the fever, but it is most usual at the end of the third or the beginning of the fourth week, the general cause being failure of the power of the heart. The prognosis is favorable in children; after forty years of age the mortality greatly increases. Stout persons are more apt to succumb than those who are thin; pregnant females are unfavorable subjects, and drunkards are especially liable to sink on account of brain complications. A very frequent pulse and a feeble first sound of the heart are bad signs; if the pulse be maintained above 120 great weakness of the heart may be surmised. A high temperature is unfavorable, and its point of elevation at the end of the first week may be taken as a guide to the amount of the subsequent fever. Excessive diarrhœa and copious hemorrhage from the bowels are bad signs, as indicating deep and extensive ulcerations. Perforation of the intestine is rarely recovered from. The danger is also in proportion to the severity of the disturbance of the nervous system; thus, a case is of a very unfavorable character when stupor or delirium becomes continuous, or muscular twitchings present themselves.

Treatment.—In no other disease have so many drugs been brought forward as specifics, and, nevertheless, none can be accepted as such. The same general rules must be, therefore, observed as in the management of other acute infectious disorders. Free ventilation, cleanliness, careful dieting, and good nursing, are more to be trusted than drugs. There is no doubt, however, as to the value of reducing the heat of the body by means of cold sponging and baths, but they must be frequently repeated in order to be of any real use. The thermometer should be constantly consulted, and as soon as it indicates a heat in the axilla of 103°, one or other of these measures must be employed. The bath is much more efficacious than sponging, but at the same time it requires a staff of well-trained and intelligent nurses, which it is impossible to provide in small hospitals, or in the houses of the poor.

The diet should consist entirely of liquids, and may comprise beef tea, soups, milk, or farinaceous food. If the heart's power is weak or its first sound feeble you should prescribe alcohol. As the disease progresses you must carefully watch the condition of the heart, and see that the patient is supplied with food at regular and frequent intervals. When the patient is convalescent let the diarrhœa entirely cease for one or two weeks before you allow solid food, lest a relapse be induced. In hospital practice see that the friends do not surreptitiously introduce food, for mistaken kindness often induces them to yield to the solicitations of the patient. After the first week or ten days you may often effect good by moderate doses of quinine (F. 32); before this it is wiser, unless there be excessive depression, to prescribe only a mixture containing small doses of phosphoric or sulphuric acid.

Some writers insist on the great value of calomel, quinine, digitalis, and cold baths, in the treatment of typhoid fever. Liebermeister says: "If the patient be admitted before the ninth day of the disease, he is first given calomel, usually two to four doses, of eight grains each, in the course of a few hours, to which very often one or two doses are added next day. From the time of his admission his temperature is taken every two or three hours by day, and in somewhat severe cases by night also, and whenever the temperature in the axilla reaches or exceeds 102°, a bath of 68° in temperature and of ten minutes in duration is given. Patients who require six or more baths during the twenty-four hours generally receive on the second evening twenty-two or thirty-seven grains of quinine, the measurements of temperature and the baths, as often as required, being still continued. If towards morning the temperature falls to 100·5° in the rectum, and if this remission is such that no baths are needed for twelve hours or longer, then forty-eight hours after the first dose a second one of the same size, or perhaps a smaller one, is given. If however, the fall of temperature was not sufficient, then the second dose is made larger, reaching forty-five grains. If this prove sufficient, then the same dose, or a smaller one, is repeated every second night as long as the continuance of the fever seems to demand it. In the very severe cases in which even forty-five grains of quinine seems insufficient, recourse is had to digitalis as soon as the morning after the administration of quinine." It is right to add to the above statement that the late Dr. Murchison, whilst admitting that no ill-effects had followed the use of large doses of quinine, and that the temperature was thereby reduced, adds that "the effect is transient," and that whilst no decided harm resulted, "occasionally delirium and collapse were induced." He thinks quinine of use where "the disease is at its crisis and the temperature is rising instead of falling." My own experience entirely accords with that of Dr. Murchison, and I find it rarely advisable to give more than ten grains for a dose.

There has been much difference of opinion respecting the management of the diarrhœa, some recommending that it should be assisted by aperients, others, that it should be restrained. As a general rule, it is best to leave it alone if there be only one or two liquid stools in the day and the patient's pulse remains good, but if it be excessive, and the heart is failing, it ought to be restrained. In the slighter cases it will be sufficient to prescribe chalk or bismuth (F. 12), with opium, and catechu or kino. Where these are not successful you must use the salts of copper (F. 19), lead (F. 15), or silver, as other vegetable astringents are not of much use. Perhaps the most useful is the sulphate of copper (one quarter of a grain with one quarter of a grain of opium every three hours). If there be much irritation about the rectum a suppository or an enema of opium is of value. Constipation is apt to follow the fever, and in that case the bowels require to be relieved by an enema or some very mild laxative, such as castor oil or the compound rhubarb powder. All severe aperients must be avoided, lest the ulcers of the intestine be irritated.

Excessive distension of the intestine in some cases proves a great trouble to the patient. It is a good plan to roll a wide flannel bandage round the abdomen, and to prescribe small doses of wood charcoal, or a carminative mixture.

Where hemorrhage occurs you had better not interfere if it be small in quantity, but where it is copious you must restrain the action of the intestines by frequently repeated small doses of opium. Some recommend that a bladder of ice be placed on the abdomen, but you should be cautious about this when the heart is feeble. You may give gallic acid (F. 1), ergot (F. 2), or perchloride of iron, or may inject ergotine subcutaneously, Some authors trust chiefly to sulphate of copper, in doses of one quarter of a grain, others prescribe ten or fifteen minims of turpentine (F. 6) every two or three hours, especially when there is a tendency to syncope.

In perforation your only hope of recovery depends on the most rigid abstinence from food, perfect rest, and the frequent injection of morphia subcutaneously.

Where much headache is complained of you may keep the head covered with cloths wrung out of cold water. If the pain is very violent at the early stage of the fever you may apply a few leeches to the temples. Where sleeplessness is a prominent symptom a moderate dose of chloral or morphia, with or without tartar emetic (F. 61), may be prescribed, but you must be cautious in the use of sedatives if the heart's action be feeble.

TYPHUS FEVER.

Prognosis.—The mortality varies greatly in different epidemics, but over a series of years it amounted, in the London Fever Hospital, to 18 per cent. It is least fatal to young children; after fifty-five years of age it cuts off nearly one half of those attacked. Stout people are more apt to sink than those who are thin, and habits of intemperance greatly lessen the chance of recovery. A dark-red rash, a very high temperature, or a sudden rise of temperature at the end of the third week, a feeble, fluttering pulse, a feeble first sound of the heart, early delirium, and profound coma, are very unfavorable signs.

Treatment.—The general method of treatment is the same as that required for typhoid, but quinine and acids seem to be especially useful. The patient must be carefully fed, and alcohol prescribed if the state of the pulse require it. There is not the same tendency to diarrhœa as in typhoid; more generally the patients require an aperient, which should be as mild as possible.

Pneumonia and bronchitis are the most common complications. They are best treated by means of hot poultices to the chest and carbonate of ammonia with infusion of senega (F. 187) or bark internally. Alcohol is usually necessary if the symptoms are of a threatening character.

Where sedatives are required do not give opium if the pupils are contracted; cannabis indica (F. 74) has been recommended by some authors as a useful substitute: when the pupils are not contracted a mixture of chloral and morphia is often of advantage.

RELAPSING FEVER.

Prognosis.—Notwithstanding the threatening aspect of this fever in its early stage, the mortality is only two or three per cent., and most cases die of the complications rather than from the disease.

Treatment.—This is the same as that of other acute infectious disorders, for we have no drug capable of shortening the first attack or preventing a relapse. Quinine in large doses, the cold bath, and other remedies, have been tried in vain. Stimulants should be used if the heart seem to fail.

Where the headache is severe, cloths wet in cold water or bladders of ice are of value, with or without the internal or subcutaneous use of morphia.

Muscular pains are best treated with hot fomentations and sedative liniments, such as those containing chloroform (F. 87), belladonna (F. 89), and opium.

Jaundice requires no special treatment, and usually subsides spontaneously after a short time.

ERYSIPELAS.

Prognosis.—This disease is frequently met with as a consequence of injuries and operations; when idiopathic it usually terminates favorably, subsiding in from six to ten days. Its probable issue is to be determined by reference to the state of the patient's general health rather than by the severity of the local inflammation. The more the symptoms resemble those of typhus the more dangerous is the case, because pyæmia is probably present in such cases. Very young children and old persons are most liable to succumb to the disease. Previous ill health makes erysipelas especially dangerous; thus, when it occurs in persons suffering from or recovering from typhus fever it is usually fatal, and it places the patient's life in great jeopardy when it attacks those affected with chronic liver or kidney disease. A slight amount of delirium does not necessarily indicate danger, but you should view with great suspicion persistent delirium of a low form, or a tendency to drowsiness. Occasionally the inflammation attacks the throat, producing œdema of the glottis, and such cases are very apt to terminate fatally.

Treatment.—In all cases it is necessary to give rest to the inflamed part, and to keep it in such a position as will favour the return of the venous blood from it. Venesection and leeching are now generally abandoned, and you should support the action of the heart instead of depressing it. As the stools are usually dark and offensive, you may commence your treatment by freely evacuating the bowels, either by a dose of calomel (F. 145) or some other active purgative. If the case is slight you may content yourself with keeping up the patient's strength with beef tea, soups, milk, and eggs; but wherever there is a very feeble pulse or a brown tongue alcohol should be administered; the amount of stimulant ought to be in proportion to the depression.

Perchloride of iron is looked upon by many writers as a specific for erysipelas; in ordinary cases they prescribe ten to twenty minims every four hours; in those that are more severe forty minims may be given, whilst still larger doses have been employed where the danger to life appeared imminent.

The local remedies that have been proposed are innumerable. In slight cases it is sufficient to apply cotton wool, so as to exclude the air from the inflamed part, or to dust it over with powdered starch or flour, or with a mixture of oxide of zinc and starch. Where the pain is excessive relief is often afforded by fomentations with a decoction of poppy heads, or by covering the part with spongio-piline soaked in hot water and sprinkled over with laudanum. Some advise the application of collodion mixed with glycerine or cod-liver oil, and spread over the part with a brush: others prefer the use of a lotion of sulphate of iron (one drachm to the pint), or that the part be painted over with a strong solution of nitrate of silver (one part to three of water).

Where the pain is severe and no sleep can be obtained recourse may be had to morphia (F. 73) or chloral (F. 98) at nights, but as a general rule, sedatives are not well borne in erysipelas, and large doses should be avoided.

If abscesses form as a consequence of inflammation, the matter should be evacuated by a free and early incision.

The slightest signs of laryngeal complications must at once arrest your attention, and the treatment should be directed to avert œdema of the glottis, or to save the life of the patient by a timely opening into the trachea, if this takes place.

SECTION II.

FEVERS ATTENDED WITH SOME LOCAL AFFECTION.

DIPHTHERIA.

Prognosis.—No case, however slight, can justify a favorable prognosis, for at any moment symptoms of a dangerous character may be developed. The chief causes of death are an affection of the larynx, septic poisoning, producing death by failure of the heart, and hemorrhage from the affected parts. The younger the child the greater the risk, as at an early age laryngeal complication is most apt to occur; feeble or unhealthy persons are likewise especially apt to sink under it. Like scarlatina, some families seem to be more severely affected than others, and you ought at once to scatter the remaining members of a household when one has died of it. The general mortality varies greatly in different epidemics, but on the average it amounts to thirty or forty per cent.

The greater the extent of the exudation the more imminent is the danger; and where there is much fœtor there is great risk of a fatal termination. If the posterior nares are implicated the issue is almost always unfavorable, and cases usually terminate badly if a wound or sore, such as a blistered surface, becomes the seat of the diphtheritic process. A very rapid or a very slow pulse is a bad sign, so is any great increase of temperature after the fifth day, or a persistence of a high temperature after the tenth day; a temperature of 105° betokens great danger.

Even after the patient has apparently recovered a fatal relapse may occur. As a general rule, the paralyses which follow diphtheria do well; slight loss of power in the muscles of the palate usually passes off in two or three weeks, but more extensive paralysis may require many months before recovery is completed.

Treatment.—As the exudation of the throat was formerly considered the first manifestation of the disease, every effort was made to remove it. Some tore it forcibly from the mucous membrane, others attempted to destroy it by the application of nitrate of silver or strong hydrochloric acid. At the present day such measures are generally abandoned, not only because a fresh membrane is formed as quickly as the original one is removed, but also from fear lest an injury to the mucous membrane might allow of the penetration of the fungus into the tissues. We are recommended to apply to the surface of the inflamed part, as well as to the membrane, a moderately strong solution of perchloride of iron (one drachm to an ounce), or of nitrate of silver (twenty grains to an ounce). If there be much fœtor from the decomposition of the membranes and discharges you may apply either of the above, or you may irrigate the parts, by means of a spray producer, with a solution of carbolic acid (two and a half grains to an ounce), or permanganate of potash (one grain and a half to an ounce), or with dilute sulphurous acid. The soreness of the throat is best relieved by the constant swallowing of small pieces of ice, or by a gargle of warm water.

When the nares are affected you may syringe them with a solution of perchloride of iron (thirty minims of the tincture to one ounce of water), or with a weak solution of common salt, or of chlorate of potash, and if they are much obstructed yo must employ an irrigator, or syringe them from behind with a bent tube. Dr. Oertal strongly recommends the constant use of steam at 113° to 122° Fahr., passed into the mouth by a funnel. He states that "the inhalation should be practised for one quarter of an hour, every half hour, and on the first and second day three, or, at the utmost, four hours' sleep must suffice for the patient, whilst nourishment must be supplied in small portions in the intervals. The intervals may be lengthened as the membranes are detached, and the throat becomes more healthy."

The patient should be carefully kept in bed until convalescence is completely established, lest a relapse take place. Avoid all unnecessary purgatives; if the bowels require an aperient you may prescribe an enema, or a dose of some mild laxative. The enlarged glands should be covered with a hot poultice or fomentation, but do not apply leeches or blisters, lest the sores thus produced should be attacked by the diphtheritic process.

There is always great depression of strength, and you should prescribe a liberal diet, consisting of beef tea, milk, soups, eggs, &c. Most practitioners treat diphtheria with the tincture of perchloride of iron, in the same doses as are employed in erysipelas. Where there is much heat of the skin two to four grains of quinine every four hours will be of service; if, on the contrary, the skin is cold and the pulse feeble, rapid, and irregular, you must have recourse to ammonia and bark (F. 50). Alcohol is almost always necessary; some prefer brandy, others champagne, others port wine or claret.

There is seldom much pain, or, at any rate, the suffering is not in proportion to the amount of exudation and inflammation. If the patient be much exhausted from want of sleep, small doses of chloral or morphia may be used, but sedatives should be employed with caution.

When diphtheria attacks the larynx emetics may be given to dislodge the membrane, and if these are unsuccessful, tracheotomy should be performed. In case of hemorrhage from the nose you may inject a solution of alum or tannic acid, and give gallic acid and ergot internally (F. 2); if these fail, the nares must be carefully plugged. Diarrhœa, if severe, requires astringents, such as bismuth and opium, but if it resists these, sulphate of copper and opium (F. 19) may be used.

PYÆMIA.

Prognosis.—Although this is usually looked upon as a surgical malady, it not unfrequently confronts us in medical practice. It is probable that most of the infectious fevers prove fatal by producing septicæmia, as in some of them abscesses are common consequences. The prognosis of well-marked cases of pyæmia is always unfavorable, but patients occasionally recover where there was every reason to believe this condition was present. In surgical practice recovery is very rare; after parturition the chance is somewhat better, although a fatal issue is the rule.

Treatment.—Various measures have been tried to obviate the ill effects of decomposing matters in the blood. Thus, the hyposulphites and the sulphocarbolates have been administered, but hitherto without success. In surgical practice any collection of pus should be at once evacuated, and every effort made to remove the chance of further infection. The patient should be placed under the best hygienic conditions, free ventilation of the room insisted upon, and the strength supported by food and alcohol in liberal quantities. Most practitioners give three to five grains of quinine every four hours, along with acids, some place more reliance on carbonate of ammonia and bark (F. 50). If diarrhœa be excessive, opium and astringents must be employed, if restlessness and want of sleep be prominent symptoms you must have recourse to moderate doses of opium or chloral.

ACUTE TUBERCULOSIS.

Prognosis.—This disease closely simulates, in many of its features, typhoid fever, but is much more dangerous. In all probability a considerable number of cases recover for a time, since it is not unusual for persons suffering from phthisis to state that the first symptoms of their disease followed what they term "gastric fever." As a general rule, however, acute tuberculosis is a most fatal malady, the patient being usually cut off by an inflammatory affection of one of the serous membranes or by pneumonia.

Treatment.—As there are often no symptoms pointing to a local complication, the treatment must be regulated by the same principles as those applied to the treatment of the fevers attended with an eruption.

You must insist on perfect rest of body and mind; if the temperature be high, as it generally is, see that the patient is kept in bed; where the pulse is unusually rapid you may prescribe digitalis (F. 55), aconite (F. 63), or quinine, but the reduction of the pulse does not necessarily imply any real improvement. The bowels should be kept open, but no good results follow free purging; on the contrary, it is apt to set up tubercular ulceration of the intestinal glands.

When the temperature is high you should order cold sponging, and in extreme cases the wet sheet or cold bath; salicylate of soda and salines (F. 175) may be useful by promoting the reduction of the temperature; if restlessness is a prominent symptom you may give small doses of chloral or morphia.

PAROTITIS.

Prognosis.—Inflammation of the parotid gland occurs under two forms. In one it is an accompaniment of typhus and other severe fevers, it proceeds rapidly to suppuration, and is named symptomatic parotitis. When it presents itself in the early stages of a fever it is almost always fatal, but recovery occasionally takes place when it occurs during convalescence.

Epidemic parotitis, or "mumps," is never attended with danger to a person previously healthy. The swelling of the gland generally reaches its height about the third, and subsides about the eighth or ninth day. Occasionally, in adults, the testis becomes inflamed, but this also disappears of itself in a few days.

Treatment.—In the epidemic form no particular treatment is required beyond keeping the bowels moderately open, and placing the patient on a restricted diet. If there be much pain you may order fomentations to the part, or frictions with a sedative liniment (F. 87). When the pain is very severe two or three leeches may be applied, but this is rarely requisite.

Symptomatic parotitis is only a complication of a more serious malady, and requires no special treatment beyond the application of hot poultices to encourage suppuration, and the opening of the abscess as soon as the presence of pus can be ascertained.

INFLUENZA.

Prognosis.—The prognosis is favorable, excepting in the case of very young or of old persons, who sometimes sink from the depression occasioned by it. Those who are attacked whilst affected with any severe chronic disease should be carefully watched, for in such cases it is apt to prove fatal.

Treatment.—Influenza usually subsides spontaneously in a few days. It is generally sufficient to confine the patient to one room, but if there be much debility or a high temperature he ought to remain in bed. Under ordinary circumstances an aperient should be given at the onset, and a saline mixture, containing chloride of ammonium (F. 183) or acetate of ammonia (F. 175), may be administered every three or four hours.

Where the patient is old or feeble you must have recourse to carbonate of ammonia and bark (F. 50), or moderate doses of quinine (F. 52), and if there be any failure of the heart wine or brandy must be prescribed. Even when convalescent the patient is generally very feeble, and should be treated with iron, quinine, and other tonics. The diet generally requires to be nutritious, and may consist of soup, beef tea, milk, and eggs.

The cough is the only symptom that gives much trouble; it must be treated upon general principles.

HOOPING-COUGH.

Prognosis.—This is generally favorable, excepting in the very young. Children under four months old are especially liable to convulsions, the occurrence of which necessitates a cautious prognosis; adults are subject to chronic affections of the lungs as a consequence of hooping-cough. When the paroxysms are very severe in a feeble child, or if capillary bronchitis or catarrhal pneumonia ensues, the prognosis should be very guarded. Convulsions are always an unfavorable sign, but they are not necessarily fatal.

Treatment.—During the first stage, whilst there is fever and the attacks of spasm are undeveloped, it will be sufficient to protect the child from cold; let it be kept in a room moderately warm, and let the gums be lanced if any teeth are projecting. The bowels should be freely opened, and the diet restricted to milk and farinaceous food. A febrifuge mixture may be given, such as one containing citrate of potash or acetate of ammonia, along with small doses of ipecacuanha (F. 178). If the expectoration be tough and scanty, alkalies are of service, such as bicarbonate of potash or chloride of ammonium, or liquor potassæ mixed with oil. In the later stages the cough often appears to be produced by the excessive quantity of mucus secreted, and under such circumstances alum or tannic acid may be prescribed with advantage. The digestive organs should be carefully attended to, as any error in diet is sufficient to increase the severity of the cough. Attacks of gastric catarrh often present themselves, during which tonics should be abandoned, and suitable treatment adopted.

In long-standing cases the child becomes pale and feeble, and loses strength. When this occurs you should give cod-liver oil which improves the digestion, and also renders the expectoration looser. The whole list of sedatives has been searched for remedies for hooping-cough. Belladonna has been advised by some, conium by others; Indian hemp, henbane, hydrocyanic acid, each has its admirers. As a general rule, bromide of potash is the most useful, and may be combined with small doses of hydrocyanic acid or chloral. When the disease is of long standing you may give bromide of iron instead of bromide of potash.

With the object of lessening the irritability of the mucous membrane of the larynx, some advise that it should be frequently painted with a solution of nitrate of silver or perchloride of iron, but this is very difficult in the case of young children. Inhalation of creasote has been also employed, but it should be used only in chronic cases.

Tonics are always useful when the disease has lasted for some time. You may give quinine or bark, along with one of the mineral acids, or some preparation of iron; the phosphate, lacto-phosphate, and carbonate being the most useful. If the iron does not agree, zinc may be substituted; in other cases arsenic is of value, especially where the disease has been unusually rebellious to treatment. Change of air, and especially to the sea-side, is the most valuable tonic in all chronic cases, and is often successful where medicines have been tried in vain.

CEREBRO-SPINAL FEVER.

Prognosis.—The mortality varies from thirty to seventy per cent., the average being about forty per cent. No case can be looked upon as not dangerous, for complications may carry off the patient, even when at the outset the symptoms were mild. An early occurrence of delirium or of coma, and the recurrence of vomiting and severe headache when the patient appears to be recovering are bad signs.

Treatment.—As we have no means of checking the general disorder of the system, we must be content with trying to alleviate the inflammation of the cerebro-spinal membranes resulting from it. Perfect rest must of course be insisted upon, together with the exclusion of light and sound.

Venesection, which was formerly employed, is now generally abandoned, but some authors still advise the application of leeches behind the ears, or the withdrawal of blood from the neck by cupping. All agree in the recommendation to use bladders filled with ice to the head, and also to the spine, when the inflammation seems to have attacked the cord.

The bowels should be freely opened, and some foreign physicians advise the use of mercury, so as to affect the gums. Baths and quinine are useless. Most practitioners prescribe opium, in order to relieve the pain and subdue the inflammation; where the pain is very intense you may inject subcutaneously one quarter or one third of a grain of morphia, and repeat it frequently; when the suffering is less severe you should prescribe frequent doses of opium by the mouth.

When the patient is convalescent many practitioners prescribe iodide of potash, along with bark (F. 111), in order to hasten the recovery by the removal of the exudation.

The diet should consist of beef tea, milk, soup, and eggs, to which alcohol may be added, in case of failure of the heart.

DYSENTERY.

Prognosis.—Acute dysentery occurs in this country sporadically, but in tropical climates it presents itself as an epidemic. The prognosis in the sporadic cases is favorable. In the epidemic form the mortality varies according to the condition of the population attacked, but it not unfrequently reaches 30 per cent. Children, old people, and those previously in ill health, are more liable than others to succumb to the disease.

Treatment.—In slight cases such as occur in this country, you will generally find it sufficient to give a dose of calomel and opium, followed by castor oil, so as to clear away any accumulation of fæces that may be producing irritation. If this does not check the complaint you may administer an enema of starch and laudanum (F. 158), and cover the abdomen with a large, hot poultice. Where there is much pain and great tenderness on pressure leeches are useful.

You must insist on perfect rest in bed, and restrict your patient to milk, barley-water, and farinaceous food.

In acute tropical dysentery you should have recourse to ipecacuanha. It is doubtful how this drug acts, but it is supposed to be beneficial by altering the various excretions poured into the intestinal canal. Dr. Maclean says:—"If it is on account of the irritability of the stomach determined to premise opium, thirty drops of the tincture should be given, and in half an hour followed by from twenty-five to thirty grains of ipecacuanha, which should be given in as small a quantity of fluid as possible. As already advised, the patient should keep perfectly still, and abstain from fluid for at least three hours. If thirsty he may suck a little ice, or a tablespoonful of cold water may be allowed. In from eight to ten hours, according to the urgency of the symptoms and the effect produced by the first dose, ipecacuanha in a reduced dose should be repeated with the same precautions as before. The treatment may require to be continued for some days, the medicine being administered in diminished doses, care being taken to allow of a sufficient interval to admit of the patient taking some mild nourishment suited to his disorder." "In malarial dysentery quinine in full doses should be given, not less than a scruple in solution some time before the ipecacuanha, and repeated until cinchonism, as evidenced by ringing in the ears, is induced. Ipecacuanha and quinine should be given in alternate doses until the characteristic effects of both are produced."

"In scorbutic dysentery our utmost efforts must be directed to improve the condition of the patient's blood. It is in this form of the disease that fresh bael fruit has been found so successful."*

In chronic dysentery, such as we frequently see in this country as the result of the tropical form, the treatment is often very difficult and unsatisfactory. Not unfrequently attacks of a subacute character intervene. Under such circumstances the treatment should be for a time suspended, and ipecacuanha and opium prescribed.

So long as the stools are watery and frequent you should restrict the patient to lightly cooked meat, farinaceous food, milk, and other substances that form but little feculent matter. Malt liquors must be prohibited, and, if stimulants are necessary, a small quantity of brandy only should be allowed.

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* 'Reynolds' System of Medicine.'

Watch the appearance of the evacuations, and if lumps or knots of fæces present themselves, prescribe small doses of castor oil with laudanum.

You will require opium in almost every case, and it may be given by the mouth or by enema (F. 158). Astringents are of great value. When the dysentery is of long standing the mineral astringents answer best, especially sulphate of copper (F. 19), acetate of lead (F. 15), or nitrate of silver (F. 17). Many advise the administration of the above in an enema. In more recent and in slight cases kino, logwood (F. 4), catechu, or tannic acid may be employed.

You will often find that a case proves rebellious to treatment by astringents. Under such circumstances ascertain if the attack was ushered in, or was attended by signs of hepatic congestion, and observe if the evacuations seem deficient in bile. If so, you may give very small doses of perchloride of mercury along with opium. Or you may discover that the patient was suffering from malaria; when such is the case, begin with one or two drops of the liquor arsenicalis twice a day, and gradually increase the dose. Where there is evidence of scurvy you must prescribe vegetables, fruit, liquid extract of bael, and other means requisite to remove this condition.

The chief complications of dysentery are hemorrhage, perforation of the intestine, and abscess of the liver. These must be treated as under ordinary conditions.

ASIATIC CHOLERA.

Prognosis.—In every epidemic of cholera there are numerous cases of severe diarrhœa, with or without vomiting, but without collapse, which have been named "*cholerine.*" These, for the most part, terminate favorably, although some succumb to the disease. The mortality of the collapsed cases is very heavy; it is especially so among infants, old persons, drunkards, and those who have been previously out of health. The danger in each case is in proportion to the amount of the collapse; the more complete the loss of pulse and warmth of skin the greater is the probability of death. You should not ground hopes of recovery on an absence of vomiting and diarrhœa alone, for the strength of the patient may be so much reduced that the evacuation of the fluids with which the gastro-intestinal canal is overloaded cannot be effected. The mortality is generally greater at the beginning of an epidemic than towards its close.

When typhoid symptoms set in, the prognosis must be chiefly determined by the state of the biliary and urinary secretions; if the stools are pale and the urine very scanty the case is unfavorable. Bloody evacuations and hematemesis are almost always fatal signs. On the average 50 per cent. of the collapsed cases perish.

Treatment.—In the slighter cases of choleraic diarrhœa you should prescribe a chalk or acid mixture along with opium (F. 8), should regulate the diet, and attend to the clothing of your patient. But where the stools are frequent and watery you ought to give a dose of opium and repeat it in an hour if necessary. If the purging still continue you may administer acetate of lead and opium, either in the shape of pill (F. 15) or mixture (F. 14), and repeat the dose every two or three hours until the purging ceases or collapse threatens. You may allow small quantities of brandy and farinaceous food, in case the pulse seems to require it. Where the stomach is so irritable that it will not retain the medicine, you may administer the opium and acetate of lead by the rectum, or use morphia subcutaneously.

In the stage of collapse it is useless to persevere with astringents and morphia, because where there is no pulse there can be no absorption, and opium, if absorbed, is apt to depress the already feeble action of the heart. In extreme cases abstain even from stimulants, but so long as you can feel the pulse you may administer small doses of ammonia (F. 49), ether (F. 51), or alcohol, watching if any effect be produced on the circulation. Hot bottles should be applied to the feet, and the patient rolled up in hot blankets, but warm baths are useless and attended with much inconvenience and distress. The cramps, which form one of the chief subjects of complaint, may be relieved by frictions with turpentine or chloroform liniments. If these fail, the subcutaneous injection of morphia, or the inhalation of a small dose of chloroform will often afford temporary relief. Pieces of ice placed in the mouth are grateful to the patient, and he may, if he wishes it, take cold or iced water freely. The injection of salines into the veins has been largely practised, on the supposition that it would compensate for the loss of fluid from the vascular system. Dr. Latta recommends carbonate of soda, 60 grains; muriate of soda, 180 grains to 6 pints of water. Schmidt advises chloride of sodium, 60 parts; chloride of potassium, 6 parts; phosphate of soda, 3 parts; carbonate of soda, 20 parts. One hundred and forty grains of this mixture to be dissolved in 40 ounces of water, and filtered. The temperature of the injection should be about 108°, and the specific gravity, 1004°. It should be injected slowly; not above 40 or 60 ounces at a time, and not faster than at the rate of two ounces in a minute.*

In the stage of reaction you may give a saline mixture containing chloride of sodium and bicarbonate of soda, and feed the patient frequently with very small quantities of liquid food. If the bowels are confined, do not use aperients, but employ an enema of warm water.

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* Dr. E. Goodeve, in 'Reynolds' System of Medicine.'

In the *uræmic* stage be careful not to check too quickly any diarrhœa that may be present, for this is often an effort of nature to remove urea from the system.

ACUTE RHEUMATISM.

Prognosis.—The prospect of recovery is favorable; when death takes place it is usually from heart disease, or from a very high temperature attended by delirium. The ordinary duration of the acute stage is about two weeks, but relapses are apt to occur which greatly prolong it. Occasionally, as the acute stage passes off, the patient becomes affected with subacute or chronic rheumatism. When a person has once suffered from the complaint, he is liable to fresh attacks on exposure to wet or cold.

The acute pericarditis and endocarditis that accompany rheumatic fever seldom end fatally, although they often give rise to morbid changes that may eventually destroy life. Pleurisy and pneumonia, which also are apt to occur as complications, generally subside. Chorea not unfrequently follows the complaint in young subjects, but although often obstinate, it is seldom productive of danger.

Treatment.—Various remedies have been recommended as specifics for acute rheumatism; of these salicylate of soda and salicylic acid appear to be the most certain. The former may be given in doses of 15 to 25 grains every six hours, and seldom fails to reduce the pulse and temperature within twenty-four or forty-eight hours. If deafness or great depression should follow its use the dose must be lessened. Relapses are, however, very apt to occur after this method of treatment. Alkaline salts are much used by some practitioners; bicarbonate of soda and of potash are the most useful, and may be given in doses of 30 grains every four hours, until the urine is rendered alkaline. Large doses of nitrate of potash (two to four drachms in two pints of water daily) have been also recommended, and the cases so treated generally do well, but the unpleasantness of the medicine, and the uncertainty of its action, are great objections against it. Quinine in two or three grain doses every three hours is another favourite method of treatment, and may be combined with alkalies.

The patient is obliged, on account of the suffering produced by motion, to remain at rest. He should be kept in bed for six or seven days after the pains and fever have entirely disappeared.

Formerly venesection was generally employed, but it is now abandoned; leeches are rarely required on account of the fugitive character of the inflammation of the joints.

Some practitioners advise the affected parts to be wrapped up in cotton wool, but, as a general rule, you will find more relief is afforded by compresses wrung out of cold water, so long as the joint remains hot and swollen. Some apply blisters to each joint as soon as it becomes inflamed; others paint it with iodine liniment. Relief of the pain is afforded by any of these applications, but I think cold water is the most beneficial.

Where pain still lingers about a joint after the fever has subsided blistering is the most effectual remedy. It was formerly the custom to give mercury, so as to produce salivation whenever the heart was affected, but this is now rarely employed. The bowels must be kept open, but severe purging ought to be avoided.

Whenever the temperature is high you must employ frequent cold sponging, and if the heat of the body be excessive (104° or 105°), and especially if there be also delirium, the cold bath is required, which must be repeated as often as necessary. It is generally requisite to obtain sleep by means of morphia or chloral (F. 98) during the first few nights of the illness; in subacute cases the compound powder of ipecacuanha serves a better purpose.

Pericarditis, endocarditis, pleurisy, pneumonia, and chorea, must be treated according to the ordinary principles.

The diet should be liquid, and consist of milk, beef tea, and farinaceous food. Lemon juice has been recommended as a specific for acute rheumatism, and may be given freely. If the patient is in the habit of drinking to excess a moderate amount of alcohol may be allowed, otherwise it should be withheld. It is wise to keep to a non-stimulating diet for a week or ten days after the fever has entirely disappeared.

The treatment of subacute rheumatism is the same as that required for the acute form of the disease.

GONORRHŒAL RHEUMATISM.

Prognosis.—As regards the danger to life, this is more favorable than acute rheumatism. The disease is not liable to affect the heart, and the fever is less severe; but, on the other hand, the duration is longer, and the patient may remain crippled for months. Stiffness and anchylosis of the joints are more apt to follow gonorrhœal than acute rheumatism.

Treatment.—We have no specific for this form of the disease. The salicylate of soda, the alkalies, and quinine are equally valueless. When the case has become chronic a long course of bichloride of mercury (F. 107) appears to be of most service; cod-liver oil is also valuable. If anæmia present itself the iodide of iron should be given, and if the appetite fail recourse must be had to quinine (F. 32) or cinchona (F. 29).

The affected joint should be kept at rest, and, if necessary, supported by a gutta-percha splint. If there be much heat and tenderness a few leeches may be used, followed by hot poultices. In the more chronic cases blisters may be applied; if there is much effusion into the joint, or if there is any thickening, the iodine liniment should be used. Pressure, in the form of an elastic bandage, is of most service when the ligaments are weak and relaxed; but if there is chronic thickening around the joints strapping with simple or mercurial plaster is indicated.

CHAPTER XVI.

CONSTITUTIONAL DISEASES FOR WHICH WE POSSESS MEDICINES SUPPOSED TO ACT AS SPECIFICS.

MALARIAL FEVER.

Prognosis.—Although ague is now comparatively rare in most parts of England, you will often meet with it in persons who have been exposed to malaria in other climates. In such individuals sudden changes of temperature or indiscretions in diet are sufficient to provoke an attack. The prognosis in uncomplicated cases is favorable, as we possess in quinine a remedy that is capable of removing the disease. Enlargement of the liver and spleen often follow malarial fevers, and are generally attended with great deterioration of the health. Persons who have resided for a length of time in the tropics occasionally suffer from anæmia produced by malaria. The prognosis of such cases must be determined by the extent to which the general health has suffered. The young usually recover, but the old are not unfrequently incapable of rallying from the disease.

Treatment.—Although we are unable to explain the action of cinchona upon ague, it may be assumed that it in some way alters the poison on which the fever depends. During the cold stage it is sufficient to place the patient in bed, and cover him with warm clothing. No benefit is derived from giving hot liquids or alcohol, or in any other way attempting to force on the hot stage.

In the hot stage you may prescribe acid or effervescing mixtures (F. 171), or if vomiting be troublesome it can be lessened by the frequent use of small pieces of ice.

As soon as the sweating stage has subsided you should commence with quinine. This used to be given in doses of two or three grains every two or three hours, and, although successful in mild attacks, it often failed in severe cases. You are, therefore, advised to administer ten grains at the end of the sweating stage, and two other doses of equal amount before the time the next fit is expected, the last dose being given two or three hours before the cold stage may be expected to begin. If there is much irritability of the stomach you may combine it with small doses of morphia. If this be insufficient to prevent vomiting, the quinine should be administered in an enema; the rectum ought to be first washed out with some warm water, and then fifteen grains should be injected, along with four ounces of beef tea. Some have recommended the subcutaneous injection of quinine, in which case the dose should vary from half a grain to two grains. The objection to this is that inflammation of the skin, followed by ulceration, is sometimes induced.

If the tongue is very foul a dose of calomel is often of use, and where you have reason to suspect the stomach to be overloaded you may administer an emetic of ipecacuanha. Where the disease does not readily yield to quinine, an emetic, given an hour before the expected attack, often acts very beneficially.

When the fits have been prevented it is useful to continue smaller doses of quinine for a week or two, taking care that the bowels are kept freely open. Sometimes the quinine fails, and we are then advised by Dr. Maclean to act upon the patient's liver by means of taraxacum and podophyllin (F. 148), returning in a week or two to the use of quinine. In chronic and very obstinate cases where the quinine seems ineffectual you can often give arsenic with success. The dose must be gradually increased from six to thirteen drops two or three times a day, watching for any symptoms that seem to show it is acting injuriously.

The sulphate of beberia has been strongly recommended in ague, but it is much less reliable than quinine; the Eucalyptus globulus has been of late also employed as a specific, but its efficacy seems open to great doubt.

In the treatment of the neuralgia arising from malaria arsenic is more valuable than quinine, although it is always advisable first to try the latter. I have known valerianate of quinine useful in the case of females.

In malarial anæmia you should advise the patient to leave the district in which he has contracted the fever. A combination of iron and quinine (F. 37), along with good diet and a moderate amount of wine, forms the best treatment. Easton's syrup (F. 94) is a useful preparation in such cases. In enlarged spleen the external application of the biniodide of mercury ointment has been strongly recommended. "A portion about the size of a nutmeg is applied on the part with a smooth spatula, and the patient is directed to sit before the fire so as to let the ointment dry into the skin." Dr. Maclean states "that in some cases where the spleen has extended down into the pelvis it has after several applications been reduced almost to its normal limits."

SYPHILIS.

Prognosis.—It is often of the greatest importance to discover if a person suffering from a chronic disorder has been affected with the venereal disease. You will frequently have to depend upon your own observation to ascertain this, for circumstances often induce the patient to deny the fact. Syphilis is always a dangerous malady, as it is apt to give rise to morbid anges in various internal organs, as well as to deteriorate the vital powers. The prognosis is more unfavorable in infants and in old persons than in those in the prime of life; individuals of a scrofulous habit, those who are affected with any serious organic disease, and such as have led a life of dissipation, are unfavorable subjects for it.

The prognosis in the tertiary forms must be determined by the organ affected, and the extent to which its functions have been interfered with. As a general rule, the discovery of a syphilitic origin for a disease of any internal organ is a favorable circumstance, as we possess remedies capable of restraining inflammatory action arising from this cause.

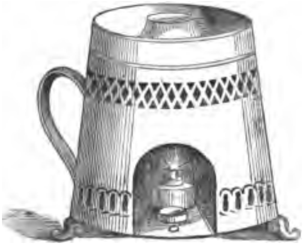
Treatment.—The treatment during the primary stage is generally considered to belong to the surgeon, and need not, therefore, be described. In the secondary, and more especially in the tertiary period, the case usually comes beneath medical care, and, therefore, requires our attention.

Various drugs have been at different periods employed for the cure of syphilis, but in the present day confidence is reposed only in mercury and iodine. How these act is undetermined, but that they have the power of controlling inflammatory action induced by the disorder is generally admitted.

Mercury is employed both in the secondary and tertiary stages, but its value is chiefly seen in those affections that have recently followed the primary infection; in fact, the greater the distance of time from the primary sore the less is mercury to be trusted for relieving syphilitic manifestations. It is most successful in the sore throat and eruption of the secondary stage, least useful in the paralytic attacks and periosteal nodes that present themselves in the later periods. The presence of cachexia does not necessarily forbid its use, for this condition is not unfrequently the consequence of the syphilitic poison. Under such circumstances the patient ought to be carefully watched, and his strength should be supported by a liberal diet and other measures calculated to improve his general health. Mercury may be introduced into the system either by the mouth or through the skin. In the former case blue pill is the most convenient form, which may be given in doses of four or five grains twice a day, or if there be much irritation of the bowels five or six grains of the Hydrarg. c. Creta may be substituted. Calomel is a favourite with many practitioners, and may be prescribed in the form of five or ten grains of the compound calomel pill every night. Others prefer the bichloride of mercury in doses varying from one twentieth to one tenth of a grain (F. 106) twice a day, taken shortly after food. Any of these preparations may produce irritation of the bowels, in which case small doses of opium may be combined with them.

Some physicians prefer the introduction of mercury through the skin, so as to avoid the derangement of the digestion to which the ordinary method of administration is apt to give rise. For this purpose half a drachm of the mercurial ointment may be rubbed into the inner part of the thighs or arms every night, the skin being well cleansed with soap and water before the inunction, and the ointment being allowed to remain on the part until the next evening. The subcutaneous injection of the bichloride has been employed, but is seldom now practised, on account of the irritation apt to be excited by it.

The use of calomel by means of the vapour bath has been strongly recommended, more especially in the treatment of the cutaneous eruptions. Mr. Lee gives the following directions for its use:—"The most convenient calomel vapour bath, and that which is now generally used, is one which was made at my request by Mr. Blaise (see Fig. 10). In this apparatus the lamp which sublimes the calomel boils the water at the same time. In the centre of the top, immediately over the wick of the lamp is a small separate circular tin plate, upon which the calomel is placed. Around this is a circular depression, which may be one third filled with boiling water. The apparatus is then placed on the ground, and the lamp is lighted. The patient sits over it, with an American cloth cloak or a mackintosh or a moleskin cloak fastened round his neck. He thus becomes surrounded by calomel vapour, which he is generally directed to inhale for two or three separate minutes during each bath. In doing this, the patient should not put his head under the cloak, but simply allow some of the vapour to escape from its upper part, and breathe it mixed with a large proportion of common air. At the expiration of a quarter of an hour or twenty minutes the calomel has volatilised, and the water has boiled away. A portion of the calomel is deposited, together with the condensed vapour of the steam, on the patient's body, and is there to be left. The quantity of spirits of wine to be used on each occasion is so regulated that the lamp goes out of its own accord about the same time as the calomel disappears. The patient then gradually unfastens the cloak, and in about a minute he is sufficiently cool to put his night-dress on without much interfering with the very fine layer of calomel which covers his body.



FIG, 10.

He must be particularly told not to wipe his skin, as by so doing he would necessarily interfere with the action of the medicine."*

In a prolonged course of mercury it is important to prevent an undue action on the gums. For this purpose the mouth should be well rinsed out with warm water, in which some tincture of myrrh or other astringent has been mixed. The teeth should be brushed twice a day very carefully, and five or ten grains of chlorate of potash should be taken three or four times a day, either in water or along with the food. The patient should also give up smoking, as this is apt to increase the tendency to inflammation of the gums.

Iodine is prescribed for the cure of the tertiary symptoms in preference to mercury; iodide of potash being the salt generally selected. You may begin with five grains two or three times a day. It is advisable, when large doses are given, to administer it along with carbonate of ammonia in half a tumblerful of water shortly after food. If five grains prove insufficient to relieve, the dose may be gradually increased; and in some cases thirty grains have been given with good results where smaller quantities had failed. If the digestion is imperfect you may combine it with calumba or cinchona, or if much anæmia be present with some form of iron.

In many cases you will find it beneficial to combine mercury and iodine, or you may follow a course of the mercury by one of iodide of potash.

Where the general health of the patient has suffered from a course of mercury you may use sarsaparilla or guaiacum with advantage. The compound decoction of sarsaparilla is often of great value in such cases, and may be combined with acids or other tonic remedies.

Although the employment of the above drugs constitutes the chief point in treatment, the state of the digestive organs should be always watched. The diet should be carefully regulated, and all indigestible substances avoided. A fair proportion of animal food may be given, and, if the patient seems cachectic, or his former habits appear to require it, a moderate amount of alcohol should be allowed.

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* Holmes' 'System of Surgery.'

Diarrhœa is apt to occur from the irritation of the mercury, and must be restrained, lest the patient's general health be depressed. The clothing should be warm, and chills or exposure to wet be carefully avoided during a mercurial course.

GOUT.

This disease may present itself in an acute or chronic form. The term "irregular gout" is employed by some writers to designate various affections occurring in those predisposed to this complaint, but in whom there is no articular inflammation. Besides the joints, gout is apt to affect the skin, throat, bronchial tubes, digestive organs, and the nervous system. Consequently, we often meet with eczema, sore throat, bronchitis, dyspepsia, and sciatica, arising from this cause. In the present day there is a tendency to attribute to it almost any chronic malady that may show itself in a person of middle or advanced age. This error should be avoided, and you should look upon those cases only as "gouty," in which you have evidence either of previous attacks of articular inflammation, or of an imperfect excretion of uric acid. A close relation has long been recognised between the formation of renal calculi and gout, and of late years it has been shown that it is one of the most common causes of contracting kidney.

Prognosis.—The prognosis of an acute attack is favorable. In the chronic form there is often serious derangement of the general health, and the patient may die of diseased kidneys. As regards the prospect of preventing the attack, acquired gout is more favorable than when it is hereditary, and the prognosis is better when the patient has the first fit of the disease in middle or advanced age. In the chronic form the joints are apt to be stiffened, or even anchylosed by the repeated deposits of urate of soda.

ACUTE GOUT.

Treatment.—In colchicum we possess a remedy that seldom fails to relieve gouty inflammation. We are unable satisfactorily to explain the way in which it acts, but it is supposed to soothe the vascular and nervous systems. It may be given in doses varying from 10 to 30 minims of the tincture every six hours, but it is most conveniently prescribed in combination with alkalies (F. 115). Bicarbonate of potash, soda, or magnesia, is usually preferred when there is much acidity in the stomach or intestines, whilst citrate of potash or magnesia is more useful where the urine is unusually scanty and high-coloured.

The affected limb should be raised, in sharp attacks the patient should be confined to bed, and in all cases the bowels should be kept open. If the tongue is very foul, a moderate dose of calomel (F. 145), or blue pill (F. 143), followed by a saline aperient, is required, but if such is not the case, it will be sufficient to order a dose of Carlsbad or Friedrichshall water, or tartrate of soda every morning.

Various means have been employed to relieve the pain. Formerly leeches were much used, but in the present day they are universally condemned, as tending to induce stiffness of the affected joint. Dr. Garrod recommends that "some carded cotton should be wrapped around the joint, and oil silk or gutta percha so applied that the moisture is retained, and by this means a kind of vapour bath is formed." The pain is usually worse at night, and where sleep is prevented, a dose of morphia may be given. The use of chloral is condemned by some, unless a dose of soda or potash be administered at the same time.

Dr. Garrod recommends the application of morphia and atropia where the pain is very severe, "in the proportion of one grain of atropia and eight grains of hydrochlorate of morphia to an ounce of spirit and water; a small piece of lint may be dipped in the solution and placed on the part, and covered with oil silk. The tinctures of belladonna and opium may be used, but the solution of the alkaloids is more cleanly and elegant."

During the attack the patient should be restricted to liquid food, and all alcoholic drinks avoided, unless there be some special reason for giving them.

CHRONIC GOUT.

The discovery of any circumstance that tends to excite an attack is, of course, of primary importance. The disease is believed to consist in the presence of an abnormal quantity of urate of soda in the circulation. This may arise from some derangement of the digestion, which produces an excess of this salt, or which lessens the alkalinity of the blood so that it more readily separates from it; or it may result from an imperfect elimination of uric acid through a defective action of the skin or kidneys. The most common preventible causes are errors in diet, such as an undue amount of animal food, or the abuse of alcoholic liquors, insufficient exercise, and mental anxiety. The absorption of lead also produces a tendency to gout.

When the patient is otherwise in good health small doses of colchicum and alkalies may be employed during the exacerbations of the gout. Colchicum is not of much use in very chronic cases, besides which, it is apt, when long continued, to disorder the digestion. Guaiacum is beneficial in the asthenic gout of old people, and may be safely continued for many months, the ammoniated tincture being best suited for this purpose. Whenever there is marked anæmia you must have recourse to iron; otherwise most cases require quinine (F. 52), or some other bitter. When the absorption of lead seems to have produced the disease a long course of iodide of potash (F. 111) is beneficial; indeed, it may be given in combination with cinchona in any very chronic case.

The regulation of the diet is of primary importance. Animal food should be taken only once a day, and late dinners avoided. Pork, veal, rich dishes, much fat, and all sauces and pickles, should be prohibited, as well as any article of food that is known to disagree with the patient. The stronger wines and malt liquors must not be taken, and if it is necessary to allow alcohol, a small quantity of whisky or brandy, well diluted, should be preferred. Tea and coffee usually disagree, more especially the latter.

As the complaint is almost always associated with dyspepsia special attention should be directed to the digestive organs. Acidity is a common cause of the complaint, and requires appropriate treatment. Regular exercise in the open air should be insisted upon.

One or other of the excreting organs is usually defective in its action. In a large proportion of cases the functional activity of the skin is impaired, and the use of Turkish or vapour baths is indicated, or where these cannot be obtained the patient should daily rub the skin briskly with a coarse towel or glove. The bowels must be carefully regulated. If the patient is plethoric, Carlsbad, Friedrichshall, or some other mineral water, may be taken each morning; but if he is at all anæmic a mild dinner pill or electuary (F. 120) will answer a better purpose. When the urine is scanty and high-coloured you may prescribe citrate or bicarbonate of potash, or carbonate of lithia; in some cases phosphate of ammonia is useful.

Where the patient is plethoric you must be careful not to check too suddenly any loss of blood to which he may be liable, as, for instance, from piles, as an occasional drain from the vascular system, if not excessive, frequently seems to afford relief.

The joints are often left weak or stiff after repeated attacks of gout. Under these circumstances internal remedies are not of much value. Where there is no thickening, the use of an elastic bandage or stocking, and regular frictions with some stimulating liniment, will prove useful. If one of the larger joints contain liquid repeated small blisters are of most service. When the surrounding structures of a large joint are much thickened frictions of iodine or the application of the iodine liniment often improves the condition. If the thickening be situated in the foot or hand, a number of the contiguous articulations being affected together with the surrounding fibrous tissue, you should strap the part either with ordinary plaster, or with mercurial plaster spread on leather.

SCURVY.

Prognosis.—A well-marked case is scarcely ever seen in the present day, excepting where there has been a deficiency of fresh vegetables during a sea voyage. On account of its comparative rarity you may easily mistake or overlook slight cases that may present themselves. The prognosis is favorable, unless there be extreme feebleness of the heart or profuse hemorrhages. Hemorrhagic inflammation of the pericardium and pleura occasionally occur. Death sometimes takes place from a sudden failure of the heart, even in cases that do not appear to be severe.

Treatment.—As a deficiency of vegetable food is the cause of scurvy, the treatment consists in supplying it. Fresh fruit or vegetables, such as lemons, oranges, and apples, or potatoes, cabbages, dandelion, and lettuce may be used. Uncooked potatoes are a favourite and effectual remedy with sailors. Where the fresh vegetables cannot be obtained, four to eight ounces of lemon juice should be given daily. In addition to fruit and vegetables a liberal allowance of fresh animal food, milk, and malt liquors should be prescribed. Where dysentery is associated with scurvy the bael fruit is valuable.

Various tonics may be given, if there be any failure of the appetite; quinine and acids (F. 32), or iron and quinine (F. 37), being the most useful. If the bowels are constipated mild aperients may be prescribed, but all severe purgatives must be avoided, as they are apt to give rise to hemorrhage from the intestines.

If there is an offensive smell from the mouth a lotion of carbolic acid or permanganate of potash may be used, and where there is much swelling of the gums they should be touched daily with nitrate of silver. If diarrhœa is troublesome it ought to be restrained with bismuth and opium (F. 12). In pericarditis or pleurisy care must be taken not to employ measures likely to reduce the heart's action, and the use of vegetables, fruits, and acids should be persevered with.

ANÆMIA.

This is one of the most common morbid conditions, and its early recognition and treatment is of the greatest importance. It probably consists in a diminution in the number of the red blood globules, but in most cases the amount of albumen is also lessened. As the blood supplies nutriment to every structure, and as the oxygen is conveyed by the red globules, you will readily understand how important it is in every disease to correct such a condition.

You distinguish anæmia by the pallor of the lips, throat, and conjunctivæ. You must not trust to the appearance of the skin, for some persons who are naturally florid present a considerable amount of colour in the cheeks when the mucous membranes are perfectly white. You can generally hear a systolic murmur at the base of the heart, and in extreme cases a continuous murmur over the jugular veins.

Anæmia presents itself whenever there has been a greater waste than the blood-forming organs have been able to make up. 1. It occurs after almost every acute febrile disease. You will often see, even in a few days after an attack of scarlatina, that the lips of the patient have become pale. Towards the termination of long-standing fevers, such as typhoid, it is usually well marked, and the deficiency of blood is one of the chief causes of the slow recovery of the patient. 2. Wherever there has been very rapid growth, either of the body as a whole, as often occurs at puberty, or of a single structure, as in the case of cancerous tumours, it is a prominent symptom. 3. It presents itself when there has been a long-continued drain upon the system. For example, it is well marked in women who have nursed their children for an undue length of time, in those who suffer from excessive menstrual discharge or leucorrhœa, and in persons who have been affected with chronic diarrhœa, dysentery, albuminuria or bronchitis. 4. It attains its highest grade whereever there is a serious structural change in any of the blood-making organs, as in chronic atrophy of the stomach, or hypertrophy of the spleen or lymphatic glands.

The prognosis of anæmia depends chiefly upon the cause producing it. It is always unfavorable in any structural disease of the blood-forming organs, as most of these affections are incurable.

Treatment.—The first and most important point is to ascertain the cause of the anæmia, and as far as possible to remove it. Where, for example, it arises from undue lactation, leucorrhœa, or piles, treatment directed to check the drain from the vascular system is usually sufficient to restore the patient to health.

In every case it is most important to supply the patient with a sufficient amount of albuminous material. If the appetite is good and the powers of digestion are unimpaired you should prescribe a liberal quantity of animal food. Always remember, however, that the amount of blood depends, not on what the patient can eat, but on what he can digest and assimilate. If, as is so often the case, the stomach is feeble, you should give soups, broths, milk, eggs, and other kinds of liquid nourishment, in preference to solid food. You must see that the diet comprises enough vegetable and starchy materials to maintain health. Some form of alcohol is almost always useful; when rapid growth is going on malt liquors are most beneficial, but in old persons, or in those who are inclined to become stout, wine is more readily digested.

In every case you ought to ascertain if the digestive organs are capable of performing their functions. If there be gastric catarrh, indicated by a foul tongue, acidity after meals, heartburn, constipation, and high-coloured urine, you will do harm in forcing food upon the patient. First correct the disorder of the stomach, and then, and not until then, prescribe liberal diet and stimulants.

The bowels are often constipated, for their muscular coat participates in the general feebleness. Be careful not to employ drastic or saline purgatives, for these drain away serum from the already impoverished vascular system. You should prescribe aloes in small and repeated doses (F. 41), or laxative medicines (F. 123), or if necessary combine these with tonics (F. 131).

Fresh air is as important as food, and the elimination of effete materials by the lungs should be encouraged by exercise. When circumstances permit, a residence by the seaside is invaluable in promoting sanguinification.

I need not remind you that the red blood-globules contain a large proportion of iron. This mineral is as much a specific for anæmia as cinchona is for ague, and mercury and iodine are for syphilis. It must be given in sufficient doses, and should be continued for some time. You should select your preparation of iron according to what you wish to effect by it. If an astringent is necessary, as in leucorrhœa, the tincture of the perchloride may be chosen (F. 35); where the stomach is irritable you may prescribe it in an effervescent form, or the ammonio-citrate (F. 38), or saccharated carbonate will answer the purpose; if the digestion is imperfect from atony of the stomach, you should prefer the acid phosphate or the lacto-phosphate; whilst if the appetite is bad you may combine with it quinine (F. 37), beberia, quassia, calumba, or some other bitter. Always remember to keep the bowels freely open when you give iron.

In some cases iron will not agree. Manganese and zinc (F. 45) have been proposed as substitutes, but they are much inferior to it. They should be taken after food, and ought to be continued for a length of time.

CHAPTER XVII.

CONSTITUTIONAL DISEASES FOR WHICH WE POSSESS NO SPECIFICS.

RHEUMATOID ARTHRITIS.

Prognosis.—As regards danger to life the prognosis is favorable, those affected by it often living to extreme old age. It neither produces heart disease like acute rheumatism, nor contracting kidney as gout does, and its injurious effects are generally limited to the joints attacked. The senile form is usually incurable, but in younger persons the progress of the disease is not unfrequently arrested, at any rate for a considerable period.

Treatment.—We have no medicine capable of arresting the disease. As it frequently follows long-continued or excessive discharges, such as leucorrhœa and uterine hemorrhage, these should be checked when they are present. If the patient is anæmic iron should be given, with or without quinine (F. 37). Cod-liver oil is especially valuable when there is much emaciation, and should be administered in small doses for a considerable length of time. In most cases iodine is useful; it may be prescribed along with quinine (F. 114) or with lemon-juice. When other remedies have failed arsenic (F. 104) may be tried, which sometimes improves the general health, and lessens the affections of the joints. Guaiacum is another drug often employed, the ammoniated tincture being the most convenient form. Whichever of these remedies you may select it should be used for a length of time, and in small doses.

The diet must be of a different kind from that required in gout. A full supply of animal food is requisite, and fat may be taken with advantage, or a nutritious soup should be given where the appetite is defective. Most patients require some form of alcoholic stimulant; porter and ale are beneficial, or where these do not agree port wine or burgundy may be substituted.

The digestive organs generally require tonics, such as quinine (F. 33), gentian, calumba, or nux vomica (F. 92). The bowels must be carefully regulated, but all severe purgatives should be avoided.

In the earlier stage of the joint affection the application of iodine or of small blisters is of service. Complete rest tends to produce stiffness, so that a moderate amount of exercise should be encouraged.

RICKETS.

Prognosis.—The prospect of recovery is good when the disease commences in children after the first year of age; the earlier the age of the child who is attacked by it the greater is the danger. Unfavorable cases are usually the result of bronchial catarrh, the softened ribs preventing the due expansion of the lungs. Spasmodic croup is apt to occur in rickety children, and is liable to cause death.

Treatment.—The two most common premonitory symptoms are diarrhœa and profuse perspirations. Whether we regard these as the causes or the effects of the rickets, we should first direct our attention to restrain them. Diarrhœa may be treated by a mixture of soda, rhubarb, and calumba, together with the administration of an occasional dose of castor oil, syrup of senna, or tincture of rhubarb, mercurials being carefully avoided. As soon as the diarrhœa has ceased you may prescribe pepsin along with acids, or extract of cinchona or sarsaparilla. Young children should be fed on milk mixed with lime water; those that are older on beef tea, or veal or chicken broth and farinaceous food. The perspirations may be relieved by sponging with sea water, or with water in which common salt has been dissolved.

As soon as the gastric and intestinal catarrh have subsided, all your efforts must be directed to improve the child's nutrition. Animal food may be allowed once or twice a day, according to the age of the patient. Some recommend uncooked beef, but the chance of tapeworm being induced should not be lost sight of. Vegetables, milk, and farinaceous food may be given, and if the patient seem to require it a small quantity of wine should be prescribed.

Many look upon cod-liver oil as a specific, and it is certainly valuable in most cases; it should be administered in small doses and continued for a length of time. Iron is usually prescribed and may be given in the form of steel wine, syrup of phosphate of iron, lacto-phosphate of lime and iron, or iodide of iron, according to circumstances. If the appetite is bad you may add quinine or calumba. The bowels must be regulated, but no severe purgative should be allowed. Change of air and sea-bathing are of great value.

For some length of time lime may be given in the form of lime water; the phosphate of lime is preferred by some practitioners.

Every means should be adopted to prevent curvatures of the bones. Rickety children should sleep on mattresses, and high pillows should be forbidden; they must not be allowed to walk until the bones are strong enough; and in the case of infants the nurse should be directed not to carry them exclusively on one arm. Slight curvatures of the limbs are generally repaired as the firmness of the bones increases.

PURPURA.

Hemorrhage into the skin or from the mucous membranes may occur in any disease in which either the blood or the walls of the vessels are in an abnormal condition. 1. It may follow various febrile disorders, such as diphtheria, scarlatina, &c. 2. It may result from disease of any of the eliminating organs, and consequently it is a symptom of acute atrophy of the liver and jaundice. 3. It occurs when any arrest has taken place in the development of the blood, as in splenic enlargements and leucæmia. 4. It presents itself when the walls of the smaller arteries and capillaries are in an abnormal state, as in lardaceous disease, and chronic atrophy of the kidneys. But we also meet with hemorrhage into the skin and from the mucous membranes without any apparent cause, and such cases are classed under the head of purpura.

An ordinary case of purpura generally ends favorably within two or three weeks, but you should be always cautious in your prognosis, because hemorrhage from the mucous membranes may become so profuse as to cause death in cases that at first sight appear to be trifling.

Treatment.—It is an advantage to keep the patient as quiet as possible, as we thereby lessen the chance of bleeding occurring into any important organ. Formerly venesection was employed, but this is now generally condemned. When the pulse is full, the bowels should be kept open by means of sulphate of soda or sulphate of magnesia, along with quinine and sulphuric acid.

Various astringent remedies have been recommended. Sulphuric acid (F. 8) was formerly prescribed in every case; latterly, ergot, given internally or injected subcutaneously, has been a favourite remedy. Others use acetate of lead (F. 14) or gallic acid (F. 2); the oil of turpentine in doses of 1 to 4 drachms has been given either by the mouth or by enema; the tincture of larch (10 or 15 minims every four hours) has been used with advantage; perchloride of iron, in half drachm doses, is a favorite remedy, but is not generally successful.

Where the hemorrhage occurs from the nose or vagina, the ice-bag must be used, and if this and astringent injections should fail, the affected parts should be carefully plugged.

DIABETES MELLITUS.

Prognosis.—The presence of sugar in the urine is always an alarming symptom, and the prospect is, as a general rule, unfavorable. You should ascertain if it is always present, for it may be only occasionally excreted, disappearing when the diet is altered or indigestion overcome. The younger the patient the more unfavorable is the prospect of recovery. The disease is usually of slow progress, but, in the young, life is seldom protracted beyond three or four years, and most die within a year or eighteen months. A form of diabetes occurs in old people, especially in those who are stout, that often lasts for very many years, without apparent detriment to the general health. The amount of sugar in such cases is small, the specific gravity of the urine is not much above the normal standard, and there is but little thirst or emaciation.

A large proportion of diabetics die of phthisis, others are cut off suddenly by coma; boils and carbuncles are another source of danger to such patients. In fact, all who are affected with diabetes hold life by a slender thread, and death is apt to be brought about by an amount of fatigue or exertion that would be readily borne by those who are in perfect health.

Treatment.—Unfortunately, we are not certain as to the organ affected, and we have no real remedy for diabetes. Every article in the Pharmacopœia has at one time or another been supposed capable of curing it, but there is none on which we can place confidence. Tonics of all kinds, such as quinine, strychnia, and arsenic, have been used unavailingly. They are, however, of use in the diabetes of old people, when the appetite begins to fail or the strength is much reduced. Dilute nitric acid was formerly a favourite remedy. In the young, iron and cod-liver oil are of service in supporting the strength, but they have no effect in lessening the amount of sugar.

Various alteratives have been employed, such as iodine and bromine. They are of no value, indeed, they seem sometimes to increase the quantity of sugar in the urine.

Opium is of use in lessening the amount of the sugar and diminishing the irritability of the patient. It may be given in doses of half a grain two or three times a day, or a corresponding dose of morphia may be substituted. Some prefer codeia as being as effective as opium, and less apt to constipate.

Lactic acid has been prescribed on the supposition that the emaciation of diabetes resulted from the sugar not being transformed into this substance. Although some cases seem to have improved, its value is very doubtful.

The treatment of diabetes mainly consists in confining the patient to a diet which contains very little starch or sugar. For example, bran bread, almond cake, or gluten bread must be substituted for the ordinary bread, and potatoes and farinaceous food should be avoided. The following is, perhaps, one of the most useful dietaries you can prescribe:

BREAKFAST.

Milk, whey, coffee, tea, bran bread, butter, bacon, eggs, animal food of any kind.

DINNER.

Beef, mutton, pork, veal, fish of any kind, birds of any kind, soups, if made with the vegetables afterwards named, and without flour, rice, sago, &c.; beef-tea, cabbage, cauliflower, broccoli, sprouts, seakale, spinach, celery, lettuce, onion, watercress, cheese, curds, crabs, lobsters, oysters, claret wine, brandy, rum.

TEA AND SUPPER

May be made of any of the above kinds of food.

No flour food or bread should be taken, excepting the bran or gluten bread. The thirst is best relieved by carrying about a bottle filled with milk and lime water, and taking a sip as often as required, but it is better to take as small a quantity of liquid as possible.

FORMULÆ.

The doses are for Adults, unless otherwise specified.

I.—ASTRINGENTS.

1. Acidi Gallici, 10—15 grs.; Aquæ Destillatæ, 12 fl. drs.

2. Liquid Extract of Ergot, 40 mins.; Gallic Acid, 10 grs.; Cassia Water, 1 oz.

3. Tincture of Opium, 3 mins.; Tincture of Catechu, 1 dr.; Decoction of Logwood to 1 oz.

4. Decoction of Logwood to 1 oz.; Lime Water, 2½ drs.

5. Decocti Hæmatoxyli, 1 fl. oz.; Acidi Nitrici, dil., 10 mins; Tinct. Opii, 5 mins.

6. Olei Terebinthinæ, 10—20 mins.; Misturæ Amygdalæ, 1 fl. oz.

7. Mucilaginis Acaciæ, 4 fl. drs.; Sodæ Bicarbonatis, 10 grs.; Olei Terebinthinæ, 10 mins.; Olei Anethi, 1 min.; Aquæ Destillatæ ad 12 fl. drs.

8. Acidi Sulph. dil., 2 drs.; Aquæ, 6 fl. oz. Two tablespoonfuls every two or three hours till the diarrhœa ceases.

9. Sacchari Albi, 4 drs.; Acidi Sulph. dil., 2 drs.; Tinct. Cardamomi Co., 4 fl. drs.; Aquæ Menthæ Pip., ad 6 fl. oz. One fourth part every four hours.

10. Aluminis, 100 grs.; Syrupi Rhœados, 6 fl. drs.; Infusi Rosæ Acidi, ad 8 fl. oz. Two tablespoonfuls every six hours.

11. Solution of Citrate of Bismuth and Ammonia, 40 mins.; Red Mixture, 1 oz.

12. Subnitrate of Bismuth, 10 grs.; Bicarbonate of Soda, 10 grs.; Comp. Tragacanth Powder, 15 grs.; Water, 1 oz.

13. Subnitrate of Bismuth, 15 grs.; Carbonate of Magnesia, 15 grs.; Mucilage of Acacia, 1 dr.; Peppermint Water, 1 oz.

14. Plumbi Acet., 2 grs.; Aceti Destil., ½ dr.; Aquæ ad 1½ oz.

15. Plumbi Acet., 2 grs.; Opii, ¼ gr.; Ext. Hyoscyami, 4 grs. To be divided into two pills.

16. Oxide of zinc, 2½ grs.; Extract of Henbane, 2 grs. In one pill.

17. Argenti Nitratis, ¼ gr.; Extracti Opii, ½ gr. In one pill.

18. Sulphate of Copper, ½ gr.; Opium, ¼ gr.; Extract of Gentian, 2 grs.; Flour, 2 grs. In one pill.

19. Sulphate of Copper, ¼ gr.; Opium, ⅙ gr.; Confection of Roses, q. s. In one pill.

II.—TONICS.

20. Gentian, 4½ grs.; Orange Peel, 1½ gr.; Rhubarb, 1 gr.; Ginger, ¾ gr.: all bruised; boiling water, 1 oz. Infuse 2 hours.

21. Rhubarb, 5 grs.; Sal Volatile, 22½ mins.; Comp. Tincture of Gentian, 22½ mins.; Peppermint Water to 1 oz.

22. Tincturæ Rhei, 1 fl. oz.; Tincturæ Gentianæ Compositæ, 2 fl. oz.; Spiritûs Ammoniæ Aromatici, Spiritûs Ætheris, of each 4 fl. drs.; Aquæ Pimentæ, 4 fl. oz. Two tablespoonfuls to be taken occasionally.

23. Sp. Ammon. Arom., Tinct. Cascarillæ, of each 4 fl. oz. One teaspoonful three times a day in a wine-glassful of water.

24. Tincturæ Calumbæ, 6 fl. drs.; Acidi Sulphurici Aromatici, 1½ fl. dr.; Syrupi Aurantii, 1 fl. oz.; Infusi Aurantii ad 8 fl. oz. One sixth part, three times a day, when the stomach is empty.

25. Acidi Hydrochlorici diluti, 1½ fl. dr.; Acidi Hydrocyanici diluti, 20 mins.; Infusi Chiratæ ad 8 fl. oz. One sixth part three times a day, immediately before meals.

26. Dil. Hydrochloric Acid, 10 mins.; Dil. Nitric Acid, 5 mins.; Infusion of Cascarilla, 1 oz.

27. Dil. Nitro-Hydrochloric Acid, 10 mins.; Infusion of Calumba, 1 oz.

28. Acidi Phosphorici dil., 2 fl. drs.; Inf. Calumbæ, 7½ fl. oz.; Tinct. Cardam. Co., ½ fl. oz. Two tablespoonfuls three times a day.

29. Acidi Phosphorici diluti, 1½ fl. dr.; Syrupi Aurantii, 6 fl. drs.; Tincturæ Cinchonæ Compositæ, 1 fl. oz.; Infusi Aurantii ad 8 fl. oz. One sixth part three times a day.

30. Acidi Nitrici diluti, *vel* Acidi Phosphorici diluti, 1½ fl. dr.; Tincturæ Nucis Vomicæ, 1 fl. dr.; Extracti Cinchonæ Flavæ Liquidi, 2 fl. drs.; Aquæ Menthæ Piperitæ ad 8 fl. oz. One sixth part three times a day, two hours before each meal.

31. Acidi Nitrici diluti, 6 fl. drs.; Tincturæ Cardamomi Compositæ, 3 fl. drs.; Syrupi, 3½ fl. oz.; Aquæ 1 fl. oz. One or two small teaspoonfuls in a wine-glassful of water for a dose.

32. Quiniæ Sulph., 12 grs.; Acid. Sulph. dil., Sp. Chloroformi, of each 2 drs.; Tinct. Aurantii, ad 1½ oz. A teaspoonful three times a day in water.

33. Strychniæ, $\frac{1}{30}$ gr.; Quin. Sulph., 2 grs.; Acid. Sulph., dil., 8 mins.; Aquæ, 1 oz.

34. Beberiæ Sulph., ½ dr.; Ext. Anthemidis, 1 scruple. Make 12 pills. One to be taken twice or thrice a day.

35. Tincturæ Ferri Perchloridi, 2 fl. drs.; Glycerini, 4 fl. drs.; Tincturæ Caradamomi Compositæ, 1 fl. oz.; Aquæ ad 8 fl. oz. One eighth part for a dose.

36. Tinct. Ferri Perchlor., 2 fl. drs.; Syr. Zingiberis, 1 oz.; Aquæ, 7 fl. oz. Two tablespoonfuls twice or thrice a day.

37. Ferri et Quiniæ Citratis, 48 grs.; Tinct. Aurantii, ½ oz.; Aquæ, 5½ oz. One tablespoonful twice a day.

38. Spiritûs Ammoniæ Aromatici, 4 fl. drs.; Ferri et Ammoniæ Citratis, 40 grs.; Infusi Quassiæ, 6½ fl. oz.; Glycerini, 1 fl. oz. One sixth part three times a day.

39. Tinct. Ferri Perchlor., 2 drs.; Sp. Etheris Nit., 1½ dr.; Tinct. Scillæ, Tinct. Digitalis, of each 2 drs.; Inf. Scoparii ad 6 oz. A tablespoonful three times a day.

40. Pepsinæ (Bullock and Co.), Ferri Redacti, of each 12 grs.; Glycerini, q. s.; fiat pil. 6. One pill three times a day after food.

41. Aloes, 1 gr.; Sulphate of Iron, 1 gr.; Extract of Gentian, 2 grs.; Treacle, q. s. In one pill.

42. Calcis Hypophosphitis, 3 grs.; Liq. Calc. Sacchar., 12 mins.; Syr. Aurantii, ½ dr.; Aquæ Menth. Pip. ad 1 oz.

43. Subnitrate of Bismuth, 15 grs.; Bicarbonate of Soda, 15 grs.; Mucilage, 1 dr.; Comp. Infusion of Gentian to 1 oz.

44. Tincturæ Ferri Perchloridi, 1½—2 fl. drs.; Zinci Phosphatis, 6 grs.; Spiritûs Chloroformi, 3 fl. drs.; Glycerini, 1 fl. oz.; Aquæ ad 8 fl. oz. One sixth part three times a day.

45. Sulphate of Zinc, 2 grs.; Extract of Gentian, 2 grs.; Comp. Rhubarb Pill, 1 gr. For one pill.

46. Ammoniated Sulphate of Copper, ¼ gr.; Extract of Gentian, 3 grs. For one pill.

47. Nitrate of Silver, ¼ gr.; Extract of Gentian, 1¾ gr.; Flour 1¾ gr.; Treacle q. s. In one pill.

48. Cerii Oxalatis, 1—2 gr.; Micæ Panis, q. s. For one pill.

III.—CARDIAC STIMULANTS.

49. Carbonate of Ammonia, 3½ grs.; Comp. Tincture of Lavender, 20 mins.; Peppermint Water to 1 oz.

50. Carbonate of Ammonia, 4 grs.; Decoction of Bark, 1 oz.

51. Spirit of Ether, 20 mins.; Aromatic Spirit of Ammonia, 20 mins.; Camphor Water to 1 oz.

52. Sulphate of Quinia, 2 grs.; Carbonate of Ammonia, 4½ grs.; Carbonate of Magnesia, 3 grs.; Comp. Tincture of Cardamoms, 12 mins; Water to 1 oz.

53. Spiritûs Ætheris, 3 fl. drs.; Spiritûs Vini Gallici, 12 fl. drs.; Infusi Cinchonæ Flavæ ad 8 fl. oz. One sixth part every four or six hours.

54. Spiritûs Chloroformi, 3 fl. drs.; Misturæ Spiritûs Vini Gallici, 8 fl. oz. One sixth part every six hours.

55. Inf. Digitalis, 7½ fl. oz.; Potass. Nitrat., 2 drs.; Acidi Hydrocyan. dil., 14 mins.; Syr. Aurantii, 2 fl. drs. A tablespoonful for a dose.

56. Pulv. Digitalis, ½—1 gr.; Ferri Sulph., 1 gr.; Pulv. Capsici, ¼ gr.; Ext. Gentianæ, 2 grs. For one pill.

57. Pulv. Digitalis, 1 dr.; Assafœtidæ, 1 dr. To be divided into pills, each of two grains. One to be taken every morning.

IV.—CARDIAC SEDATIVES.

58. Solution of Tartar Emetic, 30 mins.; Solution of Acetate of Ammonia, 2 drs.; Camphor Water, 1 oz.

59. Antim. Tartarati, $\frac{1}{12}$th gr.; Magnes. Sulph., 1 dr.; Potass. Nitrat., 5 grs.; Aquæ, 1 oz.

60. Antim. Tart., 1 gr.; Potass. Nitrat. 2 drs.; Mist. Amygdalæ, 12 fl. oz.; Tinct. Camphoræ Co., ½ fl. oz. One tablespoonful for a dose.

61. Antim. Tart., 4 grs.; Tinct. Opii, 1 fl. dr.; Aquæ Camphoræ, 8 fl. oz. One tablespoonful every two hours.

62. Antim. Tart., 2 grs.; Aquæ Destil., 7 fl. oz.; Aquæ Laurocerasi, 1 fl. dr.; Syr. Simplicis, 6 fl. drs. One tablespoonful every two hours.

63. Potassæ Citratis, 120 grs.; Liquoris Ammoniæ Acetatis, 18 fl. drs.; Spiritûs Ammoniæ Aromatici, 3 fl. drs.; Tincturæ Aconiti, 20 mins.; Aquæ ad 8 fluid oz. One sixth part every four or six hours.

V.—ANTISPASMODICS.

64. Sp. Ætheris, ½ fl. dr.; Liq. Morphiæ Hydrochlor., 15 mins.; Aquæ Menthæ Pip., 1 fl. oz.

65. Aquæ Camphoræ, 1 fl. oz.; Liq. Ammon. Acet., 2 fl. drs.; Sp. Ætheris, ½ fl. dr.; Tinct. Camphoræ Co., 1 fl. dr.; Syr. Papaveris, 1 fl. dr.

66. Aquæ Camphoræ, 1 fl. oz.; Sp. Ætheris, 2 fl. drs.; Tinct. Cardam. Co., 4 fl. drs.; Sp. Anisi, 6 fl. drs.; Ol. Carui, 12 mins.; Syr. Zingiberis, 2 fl. drs.; Aquæ Menthæ Pip., 5½ fl. oz. One or two tablespoonfuls when the flatulence is troublesome.

67. Tinct. Valer. Ammon., ½ oz.; Sp. Menthæ Pip., ½ oz.;

Tinct. Zingib., 2 drs.; Aquæ ad 8 oz. One or two tablespoonfuls to be taken when the flatulence is troublesome.

68. Tincturæ Assafœtidæ, 2 fl. drs.; Ammoniæ Carbonatis, 20 grs.; Aquæ Camphoræ, ad 4 fl. oz. One or two tablespoonfuls occasionally, when the patient is feeling languid or hysterical.

69. Ferri Valerianatis, 24 grs.; Olei Sabinæ, 24 mins.; Pilulæ Assafœtidæ Compositæ, 30 grs. Divide into twelve pills, and silver them. One to be taken three times a day.

70. Valerianate of Zinc, ½ gr.; Sulphate of Quinia, ½ gr.; Comp. Rhubarb Pill, 1 gr.; Extract of Gentian, 2 grs.

VI.—ANALGESICS.

71. Spirit of Ether, 20 mins.; Solution of Hydrochlorate of Morphia, 10 to 20 mins.; Sal Volatile, 20 mins.; Camphor Julep to 1 oz.

72. Liq. Morphiæ Hydroch., 10 to 25 mins.; Sp. Etheris, ½ dr.; Tinct. Lobeliæ, 15 mins.; Aquæ Camph., 1 oz.

73. Sodæ Bicarbonatis, 15 grs.; Liquoris Morphiæ Hydrochloratis, 10 mins.; Acidi Hydrocyanici diluti, 4 mins.; Aquæ Cinnamomi, 1 fl. oz. Make a draught, to be taken immediately.

74. Potass. Bromid., ½ dr.; Tinct. Cannabis Indicæ, 10 mins.; Mucilag. Acaciæ, 2 drs.; Aquæ Cinnam. ad 1 oz.

75. Syrupi Scillæ, Syrupi Rhœados, of each 10 fl. drs.; Aquæ Laurocerasi, 15 mins.; Tincturæ Benzoini Compositæ, 3 fl. drs.; Liquoris Morphiæ Hydrochloratis, 1 fl. dr. A small teaspoonful to be taken frequently when the cough is troublesome.

76. Spiritûs Chloroformi, 4 fl. drs.; Vini Ipecacuanhæ, 2 fl. drs.; Liquoris Morphiæ Hydrochloratis, 1 fl. dr.; Acidi Hydrocyanici diluti, 15 mins.; Syrupi Mori ad 3 fl. oz. One teaspoonful every two or three hours, until the cough is relieved.

77. Oxymel of Squills, 2 drs.; Dil. Sulphuric Acid, 30 mins.; Tincture of Opium, 15 mins.; Treacle, 6 drs. One teaspoonful when the cough is troublesome.

78. Olive Oil, 4 drs.; Confection of Hips, 6 drs.; Vinegar of Squills, 1½ dr.; Tincture of Opium, 7½ mins.; Treacle, 3 dr. One to two teaspoonfuls when the cough is troublesome.

79. Oxymel of Squills, 160 mins.; Comp. Tincture of Camphor, 80 mins.; Ipecacuanha Wine, 40 mins.; Mucilage to 1 oz. One teaspoonful when the cough is troublesome.

80. Extract of Henbane, 2 grs.; Dover's powder, 2 grs.; in one pill.

VII.—MYDRIATICS.

81. Tincture of Belladonna, 10 mins.; Camphor Water, to 1 oz.

82. Spiritûs Ætheris, 90 mins.; Spiritûs Ammoniæ Aromatici, 2 fl. drs.; Tincturæ Belladonnæ, 30 mins.; Tincturæ Chloroformi Compositæ, 40 mins.; Aquæ Camphoræ ad 4 fl. oz. Two tablespoonfuls for a dose.

83. Tinct. Belladonnæ, 10 mins.; Tinct. Nucis Vom., 10 mins.; Aquæ Camph., 1 oz.

84. Emuls. Amygdalæ, 1½ oz.; Potass. Nitrat., 5 grs.; Tinct. Camph. Co., 1 dr.; Tinct. Hyoscyami, ½ dr. To be taken at bedtime.

85. Tinct. Hyoscyami, ½ dr.; Sp. Chloroformi, 20 mins.; Aquæ Camphoræ, 1 oz. To be repeated in three hours if necessary.

86. Liniment. Aconiti, 1 oz.; Liniment. Saponis, 1 oz. One or two teaspoonfuls to be rubbed on the painful part.

87. Tinct. Opii, 2 drs.; Chloroform, 2 drs.; Liniment. Saponis, 1½ oz. One or two teaspoonfuls to be rubbed on the painful part.

88. Atropiæ, 1 gr.; Morphiæ Hydrochlorat., 8 grs.; Spirit and Water, 1 oz. A small piece of lint to be dipped in this solution, covered with oil silk, and placed on the part.

89. Liniment. Belladonnæ, 1 oz.; Liniment. Saponis, 1 oz. A small quantity to be rubbed on the painful part.

90. Liniment. Belladonnæ, 7 drs.; Chloroformi Belladonnæ, 1 dr. To be sprinkled on impermeable piline, and firmly pressed on the affected part for five minutes.

VIII.—EXCITO-MOTORS.

91. Liquor Strychniæ, 5 mins.; Dil. Hydrochloric Acid, 10 mins.; Infusion of Chiretta, 1 oz.

92. Tincture of Nux Vomica, 10 mins.; Comp. Infusion of Gentian, 1 oz.

93. Ferri et Ammon. Cit., 5 grs.; Potass. Iodidi, 2 grs.; Liq. Strychniæ, 5 mins.; Aquæ, 1 oz.

94. Easton's Syrup contains Phosphate of Iron, 1 gr.; Phosphate of Quinia, 1 gr.; Strychnia, $\frac{1}{32}$ gr. in 1 dr.

95. Quiniæ Sulphatis, Ferri Sulphatis, of each 12 grs.; Liq. Strychniæ, 30 mins.; Acidi Sulphurici Aromatici, 1½ fl. drs.; Infusi Quassiæ ad 8 fl. oz. One sixth part three times a day.

96. Liquor Strychniæ, 5 mins.; Dil. Nitrohydrochloric Acid, 10 mins.; Liquor Ferri Perchloridi, 10 mins.; Water to 1 oz.

IX.—DEPRESSO-MOTORS.

97. Potassæ Bromid., 15 grs.; Tinct. Valer. Ammon., ½ dr.; Tinct. Camph. Co., 20 mins.; Aquæ ad 1 oz.

98. Chloral. Hydrat., 10—15 grs.; Tinct. Cardam. Co., ½ dr.; Syrupi, 2 drs.; Inf. Caryophylli ad 1½ oz.

99. Potass. Bromidi, 2 drs.; Chloral. Hydrat., 1 dr.; Syr. Aurantii, 4 drs.; Infus. Caryophylli ad 6 oz. One tablespoonful three times a day in a wineglassful of water.

100. Potass. Bromidi., 1 dr.; Potass. Bicarb., 12 grs.; Sp. Chloroformi, 40 mins.; Syr. Papaveris, ½ oz.; Aquæ, 3 oz. A dessert spoonful every six hours for a child of two years.

101. Spirits of Ether, 30 mins.; Ethereal Tincture of Lobelia, 15 mins.; Camphor Mixture to 1 oz.

102. Tinct. Lobeliæ Ethereæ, 2 drs.; Ammon. Carb., 2 scruples; Sp. Chloroformi, 1 dr.; Syr. Scillæ, ½ oz.; Infusi Senegæ, 7 oz. A tablespoonful every four hours.

103. Tincturæ Lobeliæ Æthereæ, 3 fl. drs.; Vini Ipecacuanhæ, 2 fl. drs.; Misturæ Ammoniaci ad 6 fl. oz. One or two tablespoonfuls every six hours.

X.—ALTERATIVES.

104. Liquoris Arsenicalis, 3 mins.; Tincturæ Lupuli, 30 mins.; Infusi Quassiæ, 1 fl. oz.

105. Liq. Arsenicalis, 20—30 mins.; Syr. Simplicis, 3 fl. drs.; Tinct. Cardam. Co., 3 fl. drs.; Aquæ Destil., 5½ fl. oz. Two tablespoonfuls to be taken directly after food.

106. Corrosive Sublimate, $\frac{1}{12}$ gr.; Tincture of Bark, 60 mins.; Tincture of Rhubarb, 30 mins.; Water, 1 oz.

107. Liq. Hydr. Perchlor., 1 fl. dr.; Tinct. Cinchonæ, 1 fl. dr.; Aquæ Destil., 1 oz.

108. Solution of Perchloride of Mercury, 1 dr.; Iodide of Potassium, 5 grs.; Infusion of Quassia, 1 oz.

109. Grey Powder, 2½ grs.; Dover's Powder, 2½ grs.; Confection of Hips, q. s. To make one pill.

110. Blue Pill, 4 grs.; Opium, ½ gr. To make one pill.

111. Potassii Iodidi, 30 grs.; Potassæ Bicarbonatis, 60 grs.; Tincturæ Hyoscyami, 3 fl. drs.; Infusi Cinchonæ Flavæ ad 8 fl. oz. One sixth part three times a day.

112. Potassæ Iodid., 5 grs.; Potassæ Bromid., 15 grs.; Liq. Potassæ, 15 mins.; Aquæ, 1 oz.

113. Iodide of Potassium, 5 grs.; Infusion of Quassia, 1 oz.

114. Tincturæ Quiniæ, 1 fl. oz.; Syrupi Ferri Iodidi, 3—6 fl. drs.; Infusi Calumbæ ad 8 fl. oz. One sixth part three times a day.

115. Wine of Colchicum, 10 mins; Carbonate of Magnesia, 10 grs.; Bicarbonate of Potash, 10 grs.; Water, 1 oz.

116. Wine of Colchicum, 20 mins.; Carbonate of Magnesia, 8 grs.; Tincture of Opium, 5 mins.; Sulphate of Magnesia, 40 grs.; Water to 1 oz.

117. Succi Taraxaci, 6 drs.; Sodæ Carb., 1 dr.; Sp. Chloroformi, 2 drs.; Tinct. Aurantii, 4 drs.; Inf. Rhei ad 6 oz. A fourth part twice a day.

118. Pulv. Guaiaci, 3 drs.; Mucil. Acaciæ, Syr. Simpl., of each 1 oz.; Aquæ Cassiæ, 6 oz. Two tablespoonfuls three times a day.

XI.—CATHARTICS.

119. Magnesiæ Carbonatis, 120 grs.; Pulveris Rhei, 60 grs.; Vini Ipecacuanhæ, 2 fl. drs.; Pulveris Aromatici, 40 grs.; Aquæ Menthæ Piperitæ, 8 fl. oz. Two tablespoonfuls to be taken every morning.

120. Guaiacum, 1 dr.; Carbonate of Magnesia, 1 dr.; Sulphur, 1½ dr.; Ginger, ½ dr.; Treacle, 2½ drs. Dose 1 to 3 drs.

121. Confection of Senna, 6 drs.; Sulphur, 1 dr.; Dose, 1 to 2 drs.

122. Senna, 2 oz.; Sulphur, 2 oz.; Acid Tartrate of Potash, 4 oz.; Honey, q. s. Dose, 1 to 2 drs.

123. Confection of Senna, 1 oz.; Sulphur, 2 drs.; Sulphate of Potash, 2 drs.; Syrup, q. s. Dose, 50 to 100 grs.

124. Confectionis Piperis, Syrupi Sennæ, Confectionis Sulphuris, of each 1 oz.; Pulveris Jalapæ, 30 grs. One teaspoonful every morning.

125. Confectionis Sulphuris, 2 oz.; Extracti Taraxaci, 1 oz. One teaspoonful daily before breakfast.

126. Spiritûs Ammoniæ Aromatici, 4 fl. drs.; Tincturæ Rhei, 2 fl. oz.; Infusi Rhei ad 8 fl. oz. One sixth part to be taken night and morning.

127. Pulveris Rhei, Sodæ Bicarbonatis, of each 20 grs.; Infusi Rhei, 1 fl. oz. To be taken early in the morning, with two or three tablespoonfuls of water, twice or thrice a week.

128. Tincture of Gentian, ½ dr.; Bicarbonate of Soda, 10 grs.; Spirit of Chloroform, 10 mins.; Infusion of Rhubarb, ½ oz.; Peppermint Water to 1 oz.

129. Confectionis Sennæ, 2 oz.; Confectionis Scammonii, Syrupi Zingiberis, of each 1 oz.; Ferri Carbonatis Saccharatæ, 220 grs. One teaspoonful early every morning.

130. Confectionis Sennæ, Potassæ Tartratis Acidæ, Extracti Taraxaci, of each 1 oz. One teaspoonful to be taken occasionally, an hour before breakfast.

131. Infusion of Senna, ½ oz.; Tincture of Ginger, 20 mins.; Comp. Infusion of Gentian to 1½ oz.

132. Tartrate of Soda, 80 grs.; Tartrate of Potash, 80 grs.; Tincture of Senna, 80 mins.; Water to 1 oz.

133. Mint water to 1 oz.; Dil. Sulphuric Acid, 10 mins.; Sulphate of Magnesia, 1 dr.; Syrup of Red Poppies, ½ dr.

134. Light Carbonate of Magnesia, 15 grs.; Sulphate of Magnesia, 1 dr.; Powd. Rhubarb, 20 grs.; Peppermint Water to 1½ oz.

135. Magnes. Sulph., 2 drs.; Magnes. Carb., 1 scruple; Syr. Zingib., 1 dr.; Aquæ Anethi, 11 drs.

136. Light Carbonate of Magnesia, 5 grs.; Sulphate of Magnesia, 1 dr.; Peppermint Water to 1½ oz.

137. Sulphate of Soda, 45 grs.; Dil. Sulphuric Acid, 15 mins.; Peppermint Water, ½ oz.; Water to 1 oz.

138. Extracti Nucis Vomicæ, 2 grs.; Extracti Aloes Barbadensis, 6 grs.; Extracti Rhei, 20 grs. Mix and divide into six pills. One to be taken every day at dinner.

139. Pepsinæ Porci, 32 grs.; Extracti Aloes Barbadensis, 4—8 grs.; Glycerini, sufficient to make a mass. Divide into eight pills. One to be taken every day.

140. Extracti Nucis Vomicæ, 3 grs.; Pulveris Ipecacuanhæ, 6 grs.; Pilulæ Rhei Compositæ, *vel* Pilulæ Aloes et Assafœtidæ, 40 grs. Divide into twelve pills. Two to be taken every alternate night at bedtime.

141. Sulphate of Iron, 1 gr.; Aloes, ½ gr.; Extract of Gentian, q. s. For one pill.

142. Blue Pill, 2½ grs.; Compound Rhubarb Pill, 2½ grs. For one pill.

143. Blue Pill, 2 grs.; Compound Extract of Colocynth, 3 grs. In one pill.

144. Extracti Hyoscyami, 40 grs.; Pilulæ Colocynthidis Compositæ, *vel* Jalapæ Resinæ, 20 grs.; Extracti Nucis Vomicæ, 3 grs. Divide into twelve pills. One to be taken every night.

145. Hydrarg. Subchlor., 12 grs.; Ext. Colocynth Co., ½ dr.; Ol. Caryophylli, 8 mins. To be divided into eight pills. One or two for a dose.

146. Pil. Coloc. Co., 2 scruples; Ext. Hyoscyami, 1 scruple. To be divided into twelve pills.

147. Podophylli Resinæ, gr. ⅙—⅓; Pulveris Ipecacuanhæ, ½ gr.; Extracti Gentianæ, 3 grs. For one pill.

148. Podophylli Resinæ, 1 gr.; Pil. Rhei Co., 10 grs.; Ext. Hyoscyami, 4 grs. To be divided into four pills.

149. Cambogiæ, 3 grs.; Pulv. Jalapæ Co., ½ dr.

150. Cambogiæ Pulv., 2—4 grs.; Potass. Tart. Acid, ½ dr.

151. Ol. Tiglii, 2 mins.; Pil. Coloc. Co., 1 scruple; Pil. Gal-

bani Co., 2 scruples. To be divided into twelve pills. Two for a dose.

152. Elaterii, 1 gr.; Ext. Gentianæ, 1 scruple. To be divided into eight pills. One or two for a dose.

153. Liquoris Ammoniæ Acetatis, 9 fl. drs.; Spiritûs Ætheris Nitrosi, 4 fl. drs.; Elaterii, 1 gr.; Syrupi Zingiberis, 3 fl. drs. Two small teaspoonfuls in a wine-glassful of water, every two hours, until the bowels are freely acted on.

XII.—ENEMATA.

154. Comp. Mixture of Senna, 4 oz.; Decoction of Barley (tepid), 8 oz.

155. Castor Oil, 2 oz.; Decoction of Barley (tepid), 8 oz.

156. Sulphate of Magnesia, 1 oz.; Olive Oil, 2 oz.; Decoction of Barley, 18 oz.

157. Castor Oil, 4 drs.; Tincture of Assafœtida, 4 drs.; Mucilage of Starch to 12 oz.

158. Tincture of opium, 15 to 30 mins.; Mucilage of Starch, 2 oz.

XIII.—DIURETICS.

159. Acetate of Potash, 20 grs.; Vinegar of Squills, 20 mins.; Decoction of Broom, 1 oz.

160. Potassæ Nitratis, 60 grs.; Spiritûs Juniperi, 1—2 fl. drs.; Spiritûs Ætheris Nitrosi, 3 fl. drs.; Decocti Chimaphilæ (Phar. Lond. 1851) ad 8 fl. oz. One sixth part every six hours.

161. Inf. Digitalis, 1½ oz.; Sp. Ether. Nit., 6 drs.; Syr. Simplicis, ½ oz.; Aquæ ad 6 oz. A tablespoonful three times a day.

162. Inf. Digitalis, 2 fl. drs.; Sp. Ætheris Nit., ½ fl. dr.; Decocti Scoparii, 10 fl. drs.

163. Tincturæ Scillæ, 2 fl. drs.; Tincturæ Camphoræ Compositæ, 2 fl. drs.; Liquoris Ammoniæ Acetatis, 12 fl. drs.; Decocti Scoparii ad 8 fl. oz. One sixth part three times a day.

164. Spiritûs Juniperi, 4 fl. drs.; Potassæ Tartratis Acidæ, 1 oz.; Decocti Scoparii ad 12 oz. One sixth part three times a day.

165. Potassii Iodidi, 12 grs.; Potassæ Nitratis, 30 grs.; Sp. Æther. Nitr., 1 fl. dr.; Liquor Taraxaci, 3 drs.; Tinct. Scillæ, 30 mins.; Tinct. Digitalis, 24 mins.; Aquæ ad 4 oz.; Syrup Aurantii, 4 oz. A tablespoonful every four hours. (For a child six years old.)

166. Potassæ Acetatis, 120 grs.; Syrupi Scillæ, 6 fl. drs.; Spiritûs Ætheris Nitrosi, 3 fl. drs.; Tincturæ Digitalis, 30 mins. — 1 fl. dr.; Succi Scoparii, 6 fl. drs.; Aquæ ad 8 fl. oz. One sixth part every six or eight hours.

167. Squill, 1 gr.; Blue Pill, 2 grs.; Digitalis Powder, ½ gr.; Extract of Conium, 1½ gr.; Creasote, q. s. To make one pill.

168. Digitalis Foliæ, Hydrargyri Subchloridi, of each 5 grs.; Extracti Conii, 60 grs. Divide into fifteen pills; one to be taken three times a day.

169. Copaibæ, 2 oz.; Vitel. Ovi, No. 2; Syr. Tolu, 2 oz.; Vini Albi, 4 oz.; one tablespoonful for a dose.

XIV.—DIAPHORETICS.

170. Bicarbonate of Potash, 27½ grs.; water, 1 oz.; Citric Acid, 20 grs.; Water, 1 oz.

171. Sodæ Bicarb., 2½ drs.; Sp. Ammon. Ar., ½ oz.; Syrup Aurantii, ½ oz.; Aquæ ad 8 drs. Acid. Tartaric., 2 drs.; Aquæ, 8 oz. Two tablespoonfuls of each mixture to be added together and taken when effervescing.

172. Liquor Ammon. Acet., 2 oz.; Spirit. Ether. Nit., 2 drs.; Aquæ Camph. ad 8 oz. Two tablespoonfuls every four hours.

173. Ammoniæ Carbonatis, 120 grs.; Acidi Hydrocyanici diluti, 20 mins.; Tincturæ Cardamomi Compositæ, 6 fl. drs.; Infusi Aurantii ad 8 fl. oz. One sixth part to be made into an effervescing draught with one tablespoonful of fresh lemon juice, or with eighteen grains of citric acid. To be taken twice or thrice daily.

174. Spiritûs Ammoniæ Aromatici, 4 fl. drs.; Potassæ Bicarbonatis, 120 grs.; Tincturæ Hyoscyami, 3 fl. drs.; Infusi Cascarillæ ad 8 fl. oz. One sixth part every four hours, made into an effervescing draught with one tablespoonful of lemon juice.

175. Liq. Ammon. Acet., 2 fl. oz.; Syr. Simplicis, 1 fl. oz.; Aquæ fl. Aurantii, 1 fl. oz.; Aquæ Camphoræ, 4 fl. oz. Two tablespoonfuls to be taken every four hours.

176. Solution of Acetate of Ammonia, 96 mins.; Tartar Emetic, ⅙ gr.; Spirits of Nitre, 24 mins.; Camphorated Spirits, 1½ min.; Water to 1 oz.

177. Vini Antimoniale, 1 fl. dr.; Magnesiæ Sulphatis, 160 grs.; Liquoris Ammoniæ Acetatis, 12 fl. drs.; Syrupi Papaveris, 6 fl. drs.; Aquæ Camphoræ ad 8 fl. oz. One sixth part two or three times in the twenty-four hours.

XV.—EXPECTORANTS.

178. Potassæ Bicarbonatis, 40 grs.; Acid. Citrici, 20 grs.; Vin. Antimoniale, 1½ dr.; Vin. Ipecac., 20 mins.; Syr. Limonum, 2½ drs.; Aquæ, 2½ oz. A dessert-spoonful every three or four hours (for a child two years old).

179. Solution of Acetate of Ammonia, 2 drs.; Ipecac. Wine, 20 mins.; Water to 1 oz.

180. Vini Antim., 2 fl. dr.; Liq. Ammoniæ Acet., 1 fl. oz.; Syr. Tolutani, 6 fl. drs.; Aquæ, 4 fl. oz. One sixth part every four hours.

181. Ipecacuanha, ⅓ gr.; Squills, ½ gr.; Extract of Conium, 1⅔ gr.; Extract of Henbane, 1⅔ gr. In one pill.

182. Powdered Squill, 2 grs.; Morphia, ⅙ gr.; Ipecacuanha, ½ gr.; Oil of Aniseed, 1 drop. In one pill.

183. Chloride of Ammonium, 10 grs.; Spirit of Chloroform, 20 mins.; Antimonial Wine, 10 mins.; Camphor Water to 1 oz. To be taken every four or six hours.

184. Antimonial Wine 10 mins.; Tincture of Squills, 10 mins.; Infusion of Linseed, 1 oz.

185. Tincture of Squills, 10 mins.; Comp. Tincture of Camphor, 15 mins.; Infusion of Cascarilla to 1 oz.

186. Decocti Senegæ, 3 oz.; Liq. Ammon., Acet. Mucil. Acaciæ, Syr. Papaveris, of each 1 oz. Two tablespoonfuls for a dose.

187. Ammon. Carb., 4 grs.; Sp. Chloroform., 15 mins.; Decoct. Senegæ ad 1 oz.

188. Decocti Senegæ, 2 oz. 5 drs.; Ammon. Carb., 5 grs.; Tinct. Scillæ, 16 mins.; Syr. Tolu, 2 dr. Two teaspoonfuls in milk every fourth hour (for a child from three to four years old).

189. Mist. Ammoniaci, 4½ fl. oz.; Tinct. Camphoræ Co., ½ fl. oz.; Syr. Tolutani, 1 fl. oz. One tablespoonful two or three times a day.

190. *Atomised Fluids for Inhalation, as given by Dr. Tanner.*

The following drugs may be used in the form of spray. The dose mentioned is to be added to one ounce of water. Always commence with the smallest dose.

Acidum Carbolicum	1 to 2 grs.
Acidum Sulphurosum	2 to 8 fl. drs.
Acidum Tannicum	3 to 12 grs.
Alumen Exsiccatum	3 to 20 grs.
Aqua Laurocerasi	5 to 20 mins.
Argenti Nitras	1 to 3 grs.
Borax	5 to 20 grs.
Extractum Belladonnæ	¼ to 1 gr.
Extractum Conii	5 to 10 grs.
Extractum Cannabis Indicæ	¼ to 1 gr.
Extractum Opii	¼ to 2 grs.
Ferri Ammonio-Sulphas	3 to 6 grs.
Hydrargyri Perchloridum	$\frac{1}{16}$ to ⅛ gr.
Liquor Arsenicalis	3 to 8 mins.
Liquor Calcis Saccharatus	1 to 4 fl. drs.
Oleum Terebinthinæ	1 to 5 mins.
Potassæ Chloras	5 to 10 grs.
Potassæ Permanganas	2 to 4 grs.
Potassii Bromidum	2 to 10 grs.
Potassii Iodidum	2 to 10 grs.
Sodii Chloridum	5 to 40 grs.
Tinctura Ferri Perchloridi	5 to 30 mins.
Tinctura Iodi	1 to 15 mins.
Tinctura Opii	3 to 20 mins.
Zinci Sulphas	3 to 15 grs.

191. Dr. Mackenzie gives the following solutions as being most valuable in chronic laryngitis for application with a brush:—Ferri Perchlor., 60 grs.; Ferri Persulph., 60 grs.; Ferri Sulph., 120 grs.; Cupri Sulph., 10 grs.; Zinc. Chlorid., 30 grs.; Zinc. Acet., 5 grs.; Zinc. Sulph., 10 grs.; Alum, 30 grs.; Alum Chlor., 60 grs. Dissolved in an ounce of water or glycerine.

192. For inhalations Dr. Mackenzie advises—Ol. Pini Sylvest., 2 fl. drs. ad 3 fl. drs.; Magnes. Carb. levis, 60 to 90 grs.; Aquæ ad 3 fl. oz. A teaspoonful to be added to a pint of water at 150° F., and inhaled for five minutes, two or three times daily. Ol. Juniperi, 20 mins.; Magnes. Carb. levis, 10 grs.; Aquæ ad 3 fl. oz. A teaspoonful for each inhalation, as above.

193. Dr. Mackenzie recommends for spray inhalations the following ingredients:—The proportions given are for 1 oz. of water, and the quantity to be used each time should be from 2 fl. drs. to ½ oz. of the solution:—Alum, 10 to 20 grs.; Tannin, 1 to 20 grs.; Perchloride of Iron, ⅛ to 2 grs.; ditto, 2 to 10 grs. (in hemorrhage); Sulphate of Zinc, 1 to 6 grs.

XVI.—GARGLES.

194. Solution of Chlorinated Soda, 4 drs.; Water, 20 oz.

195. Alum, 1 dr.; Dilute Sulph. Acid, 2 drs.; Tinct. Myrrh, 4 drs.; Water to 13 oz.

196. Dil. Nitric Acid, 1 dr.; Treacle, 1 dr.; Water to 4 oz.

197. Chlorate of Potash, 1 dr.; Honey or Glycerine, ½ oz.; Water to 8 oz.

198. Borax, 1 dr.; Honey, 2 drs.; Water to 4 oz.

199 Tannic acid, ½ dr.; Rectified Spirit, ½ dr.; Camphor Water to 8 oz.

200. Dil. Hydrochloric Acid, 1 dr.; Honey, ½ oz.; Water, 8 oz.

201. Argenti Nit., 2 to 5 grs.; Aquæ Destil., 1 oz. To be applied to the mouth.

202. Solution of Permanganate of Potash, ½ oz.; Water, 20 oz.

XVII.—LOZENGES.

203. *Throat Hospital Lozenges.*

Benzoic Acid, ½ gr., every four hours. Valuable voice lozenge and stimulant.

Carbolic Acid, 1 gr., every four hours. Antiseptic and stimulant in offensive secretion and ulceration.

Tannic Acid, 1½ gr., every four hours. Strongly astringent —for relaxed Throat.

Marshmallow, 1 gr., Pulv. every half hour. Emollient after operation and irritable throat or cough.

Catechu, 2 grs., every three hours. Astringent; milder than tannin; in relaxed throat.

Cubebs, ½ gr., every three hours. To allay excessive secretion.

Guaiacum, 2 grs., every two hours. For inflamed throat.

Logwood, 2 grs., Ext., every three hours. Mild astringent for relaxed throat.

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Acid Tart. Potash, 3 grs., every three hours. Topical sialogogue to increase secretion.

Pellitory, 1 gr. Pulv., every three hours. Valuable sialogogue to increase secretion.

Opium, $\frac{1}{10}$ gr. Ext., every three hours. Sedative for irritable cough and painful states of the throat.

204. *British Pharmacopœia Lozenges.*

Tannic Acid, ½ gr., every three hours. Astringent in relaxed throat.

Bismuth, 2 grs., every three hours. Indigestion, heartburn, and irritable stomach.

Catechu, 1 gr., every three hours. Astringent in relaxed throat.

Reduced Iron, 1 gr., every three hours. Mild tonic.

Ipecacuanha, ¼ gr., every three hours. To promote expectoration.

Morphia, $\frac{1}{36}$ gr., every three hours. Sedative for irritable cough.

Morphia, $\frac{1}{36}$ gr., and Ipecacuanha, $\frac{1}{12}$ gr., every three hours. Cough lozenge, sedative and expectorant.

Opium, $\frac{1}{10}$ gr., every three hours. Sedative for irritable cough.

Chlorate of Potash, 5 grs., every three hours. Antiseptic and stimulant for sore throat and ulceration.

Bicarbonate of Soda, 5 grs., every three hours. Antacid for acidity and heartburn.

XVIII.—ANTACIDS.

205. Bicarbonate of Soda, ¼ oz.; Aromatic Spirit of Ammonia, ½ oz.; Spirit of Chloroform, 3 drs.; Infusion of Cloves, 8 oz. Dose, 1 to 2 oz.

206. Potassæ Bicarbonatis, 120 grs.; Spiritûs Ammoniæ Aromatici, 3 fl. drs.; Tincturæ Aconiti, 30 mins.; Infusi Lupuli ad 8 fl. oz. One sixth part three times a day.

207. Ammoniæ Carbonatis, 5 grs.; Tincturæ Aurantii, 1 fl. dr.; Infusi Chiratæ, 1 fl. oz.; Aquæ ad 2 fl. oz.

208. Solution of Potash, 15 mins.; Mucilaginous Mixture, 1 oz.

209. Magnesiæ Carbonatis, Sodæ Bicarbonatis, of each 15 grs.; Infusi Serpentariæ, 12 fl. drs.

210. Aquæ Camphoræ, 6½ oz.; Sodæ Carb., 1½ dr.; Ammon. Carb., 1 scruple; Tinct. Calumbæ, ½ oz.; Sp. Anisi, Tinct. Card. Co., of each ½ oz. Two tablespoonfuls 2 or 3 times a day.

211. Liq. Potassæ, 15 mins.; Inf. Serpentariæ, 9 drs.; Tinct.

Serpentariæ, 1 dr.; Syr. Zingib., ½ dr. To be taken twice a day.

212. Sodæ Bicarb., 2 drs.; Ammon. Carb., 2 scruples; Ext. Taraxaci, 1 dr.; Sp. Ætheris Nit., 6 drs.; Tinct. Cardam. Co., 1 oz.; Aquæ Menthæ Pip. ad 12 oz. Three tablespoonfuls three times a day.

213. Magnes. Carb., 1½ dr.; Ammon. Carb., ½ dr.; Aquæ Menth. Vir., 5½ oz.; Tinct. Lavand. Co., 2 drs.; Sp. Carui, 1 dr.; Syr. Zingib., 2 dr. One tablespoonful to be taken occasionally.

214. Lithiæ Citratis, 10 grs; Acidi Citrici, 20 grs.; Syr. Aurantii, ½ dr.; Aquæ, 2 oz. To be taken in a state of effervescence with 14 grs. of Bicarb. Soda dissolved in 2 oz. of water.

XIX.—ANTHELMINTICS.

215. Cusso, 240 grs.; Mellis Depurati, sufficient to make an electuary. "Half of this electuary to be taken early in the morning, and the remainder six hours afterwards."

216. The officinal Infusum Cusso may also be taken in the same way, in doses of 4—8 fl. oz.

217. Santonini, 2—6 grs.; Sacchari Lactis, 15 grs. To be taken early in the morning, suspended in a tablespoonful of cream. The patient ought to have fasted for twelve hours previously. The dose may be repeated daily for four or five days, if necessary; and its exhibition should be followed at the end of six hours by the administration of an ounce of the Compound Decoction of Aloes.

218. Extracti Filicis Liquidi, 20—40 mins.; Syrupi Zingiberis, 2 fl. drs.; Mucilaginis Tragacanthæ, 2 fl oz.; Aquæ ad 4 fl oz. To be taken early in the morning, only liquid nourishment having been allowed the previous day. Four hours afterwards a purgative dose of castor oil or compound decoction of aloes should be administered.

XX.—ANTISEPTICS.

219. Glycerine of Carbolic Acid, 8 to 12 mins.; Syrup of Orange Peel, 30 mins.; Cinnamon Water to 1 oz. To be taken every three hours.

220. Subnitrate of Bismuth, 10 grs.; Powdered Wood Charcoal, 10 grs.; Bicarbonate of Soda, 5 grs. For a dose.

221. Creasoti, 6 mins.; Pulv. Tragacanthæ, ½ dr.; Aquæ Camphoræ, 6 fl. oz. A sixth part to be taken for a dose.

222. Sodæ Sulphitis, 30—40 grs.; Inf. Quassiæ, 1½ oz. To be taken three times a day.

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